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Improved Method of Operating Valves.

In the ordinary arrangement of the parts by which valves of steam engines are operated, and the point of cut-off is regulated by the governor, the means employed for tripping the valves are of such a character and their operation is attended with so much difficulty as to affect the action of the governor, and prevent it from correctly performing its functions. These defects are remedied in this simple and effective contrivance by so arranging the parts which are actuated by the governor as not to affect the operation of the same, except at the moment of tripping the valves, and then only in a very small degree.

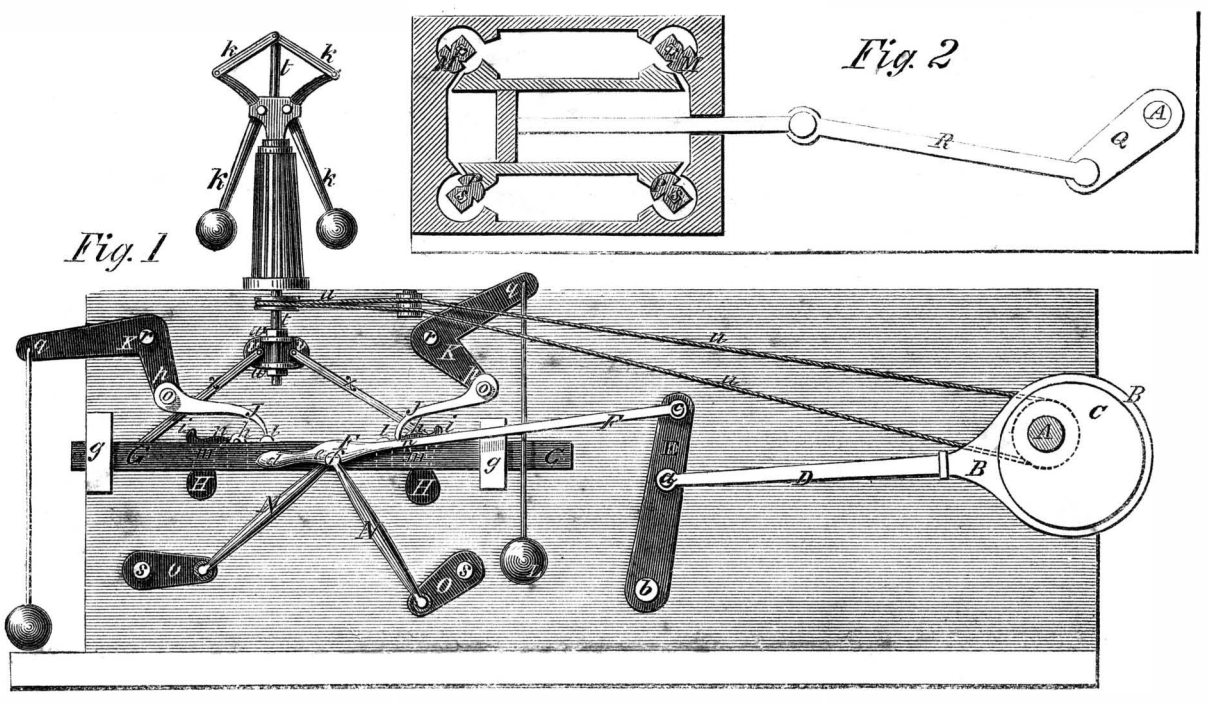
In our engravings, Fig. 1 represents a side elevation of this improved valve gearing, and Fig. 2 is a vertical section through the steam cylinder, steam chests and valves.

The shaft, A, is provided with the usual eccentric, C, and yoke, B, from which latter extends a rod, D, connected to a wrist pin, *a*, on the arm, E, which is pivoted at *b*. The end of a hand lever, F, is attached by a wrist pin, *c*, to near the top of the lever, E, the opposite end of said hand lever being furnished with a handle, *d*, and near thereto a depression, *e*, that sets over a pin or stud, *f*, that is attached to the sliding bar, G, said sliding bar moving through guides, *g g*. On this bar, G, are two adjustable dogs or pins, *h h*, which are carried back and forth as the bar reciprocates, and operate against projections, *i i*, of the swinging weighted dogs, H H, said swinging dogs being attached to slides, that move forward and back alongside of and parallel with the sliding bar, G, but independently of it. The swinging dogs, H H, when moved towards their respective stops, *l l*, are met by the pins, *h h*, which strike against the projections, *i i*, and are then caused to turn or rock on their pivoted points, *m m*, until said projections are pressed down on a line with the upper edge of the bar, G, and the point or toe, *n*, of the swinging dog passes under the pawl J, and raising it up, throws it above the stop, *l*. The pawls, J J, are pivoted respectively at *o o*, to the arms, *p p*, of the levers, K, and to the other arms, *q*, of said levers are attached weights, L L, for bringing said levers to their former position after being rocked with their shafts, *x x*, by the stop or catch, *l*, and pawl, J, so as to enable the steam to be instantly cut off. Valves, M M. Fig. 2, are screwed to the shafts, *r r*, of the levers, K K, which valves oscillate past the inlet openings leading from the steam chest to the cylinder, for the purpose of cutting off the steam.

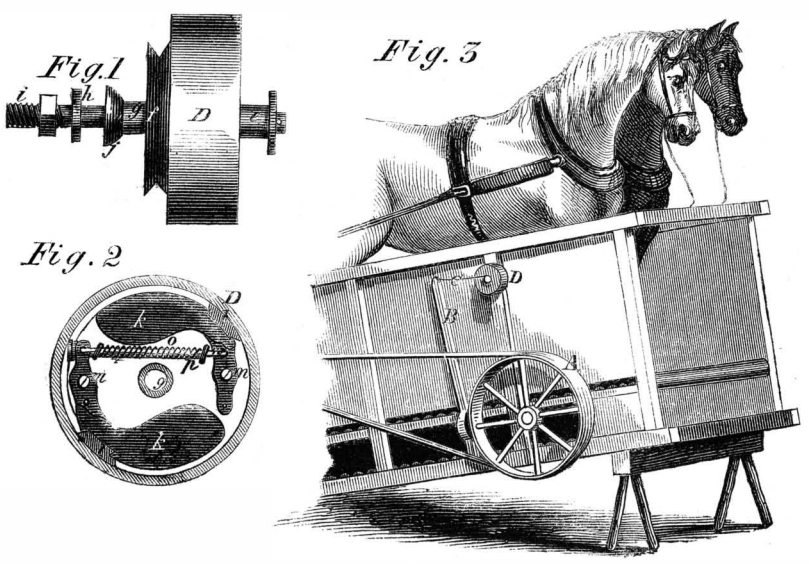
To the sliding bar, G, by the pin, *f*, are attached the upper ends of the connecting rods, N N, the lower end of the same being attached to the cranks, O O, which are secured to the shaft, S S, to which the exhaust valves, P P, are fastened, said valves, P, being below the cylinder, and acting like and in concert with the valves, M. The stem, *t*, of the governor is rotated by an endless band, *u*, passing around a pulley thereon, and another pulley on the shaft, A, and the crosshead, *v*, is adjusted on said stem, *t*, by the screw nuts, *w w*. To this crosshead, *v*, are connected the upper ends of the rods, *x x*, said rods extending from thence to the bars, I I, which carry the swinging dogs, H H, and which bars, I, move through proper guides, *y y*. By means of these rods, X X, whether by the adjustment of the crosshead, *v*, or by the centrifugal force of the balls of the governor, the slides, I, with their respective dogs, H, are brought nearer to or further from each other, and thus the valves are tripped at any point in the stroke of the engine that may be desirable. It will be observed, and it is a distinguishable feature in the arrangement described, that there is no friction on the governor except at the moment of tripping of the pawls, J, and then it is so light, being merely to depress the end of the swinging dog, that the governor is not affected in its regular motion thereby, as it would be were any of the parts bearing or resting upon it; and, besides, what resistance is applied against the governor is merely to swing the hanging dog on its pivot—not to slide or move anything from one point or position to another, but simply to pendulate the dog, H. This allows the governor to move at an uniform velocity, and, of course, the tripping of the valves is correspondingly uniform, which is not the case where the governor has other work to do, as it has when connected to the valve apparatus.

Any further information upon the subject of this highly ingenious improvement, which was patented March 16, 1858, can be had by addressing the inventor, T. S. Jamieson, Alexandria, Va.

JAMIESON'S METHOD OF OPERATING VALVES.



PUSEY'S HORSE POWER GOVERNOR.



The useful little device which forms the subject of the accompanying illustration is designed to regulate the speed of horse powers, and keep the fly wheel rotating at an equal and regular rate.

Fig. 1 is a side elevation of the device. *i* is a shaft or axle provided with the projection, *p*, and passing through the center of the box, D, the journal of which, *e*, projects beyond it; *h* is a washer, by which, and the screw, *i*, the governor can be attached to the horse power; *f* is a band wheel cast to a face plate, and on a journal, *g*, and to which is connected the inside parts represented in Fig. 2. To this plate, which can rotate in D are attached two pieces of metal, *k*, by means of screws, *m*, which also form a center on which *k* can move; on the outside of *k* is inserted a piece of wood, *l*, that serves as a brake block. These pieces, *k*, are connected by a bar, *n*, on which is a spring, *o*, the tension of which is rendered more or less by the bar, *p*, that is brought up or tightened by a screw.

The operation is very simple. The box, D, is fixed to the side of a horse power as seen in Fig. 3, and a cord, C, passed round, *e*, the other end being connected to a break lever, B, that acts on the fly wheel, A. From the fly wheel, A, a band passes round *f*, so that as the fly wheel is revolved, *f* is rotated by the band. Should the fly wheel be going too fast, then *f* will be rotated fast enough (the speed being regulated by the tension on the spring, *o*) to throw out the pieces, *k*, by centrifugal force, and this will bring the pieces of wood, *l*, in contact with the inner periphery of D, and consequently carry it round with them; but in so doing it winds up C on *e*, and causes the brake to act on the fly wheel, thus reducing the speed of the machine.

It will be seen from the arrangement of the parts that this is a simple and perfect regulator or governor for horse powers or similar motors, and it does not act by jerks, but with the proper regularity and precision. The inventor is Lea Pusey, of the firm of J. Pusey & Sons, of Wilmington, Del., from whom more information can be obtained. It was patented May 25, 1858.

Seasonable Information.

Apart from the advantages of bathing in salt water, the inhalation of sea air has a salubrious and beneficial effect, which is most apparent upon those who resort to the coast from towns or from inland districts. It has been shown by Prof. Faraday and other chemists that oxygen in the particular condition known under the name of "ozone," exists in large proportion in sea air. Though air impregnated with the saline of the sea is found too strong for some persons, in the great majority of cases an occasional visit to the coast is a capital restorative of vital power to those whose nerves are exhausted by long sojourn in inland towns.

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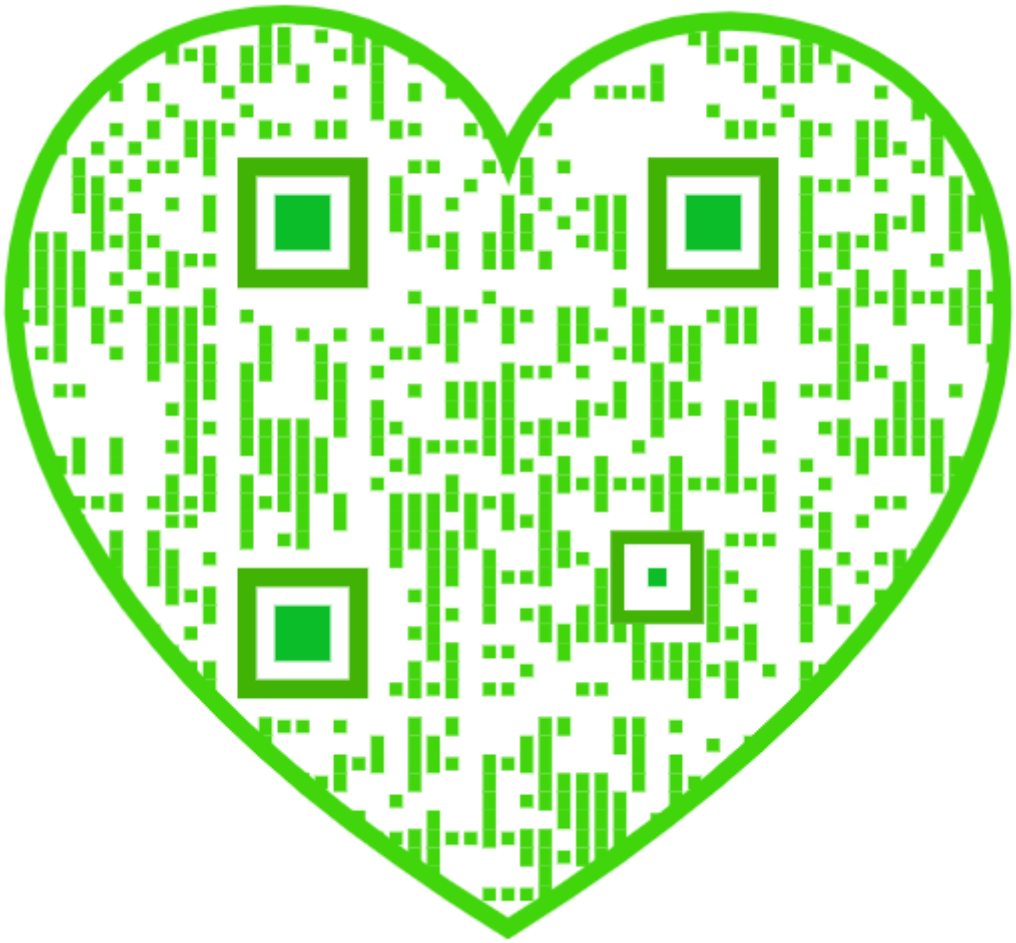

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 6, 1858.

[Reported officially for the Scientific American.]

MACHINE FOR CUTTING CORKS—Robert P. Abernethey, (assigned to Union Cork Manufacturing Co.,) of Cincinnati, Ohio: I claim, first, In this connection, the automatic feed rest, d e f g, substantially as set forth.

Second, Imparting to the mandrels of a cork-cutting machine a compound rotary and vibratory movement, by means and for the purposes substantially as set forth.

MACHINE FOR CUTTING CORKS—Robert P. Abernethey and Mahlon M. Wombaugh, of Cincinnati, Ohio: We claim, first, The rotary cutter head, having alternate blades and spaces, in combination with the automatic mandrels, to admit of the removal of the finished cork, and clamping the fresh blank without removing either cutter or mandrels, to admit of the removal of the finished cork, and clamping the fresh blank without removing either cutter or mandrel.

Second, In combination with the intermittent cutting disk and mandrels, substantially as described, we claim the described arrangement of half wheel cam movement and the accessories, for the purposes set forth.

Third, We claim in this connection the feed apparatus, consisting of the hopper, notched piston and cam movement, with their accessories, substantially as described.

Fourth, In the described connection with the feed piston and mandrels, we claim the spring pressure plate or finger, operated substantially as and for the purpose set forth.

Fifth, In the described combination with the feed piston and mandrels, we claim the discharging spring or strip, substantially as set forth.

MACHINES FOR RAKING AND LOADING HAY—John B. Benton, J. F. Behn, and Gottlob Bastian, of Buffalo, N. Y.: We do not claim the rake.

Neither do we claim the securing of the shaft to the wagon wheels, nor the forks being attached to the shaft, as broadly considered.

But we claim the combination of the bands, o, plate, d, and forks, n, the whole being constructed and arranged for operating conjointly as and for the purposes set forth.

SEWING MACHINES—Robert M. Berry, of New York City: I claim lifting the feed slide, b, from the cloth, as described, by the double trip lever, f, the trip slide, h, and the trip spur, g, or their equivalents, operated and operating substantially in the manner and for the purposes set forth.

MACHINES FOR GATHERING STONES—G. W. Bishup, of Brooklyn, N. Y.: I claim the box, A, provided with the inclined plane, D, and used in connection with the reciprocating scraper, F, and spring guides, G G, or their equivalents, the whole being arranged to operate as and for the purpose set forth.

[A description of this invention will be given next week.]

SEWING MACHINES—Lyman R. Blake, of South Abington, Mass.: I claim the arrangement of the rest, b, of a sewing mechanism, or combining it with an auxiliary arm, D, of such form as to be capable of entering a shoe and introducing the rest, b, into the toe, as well as other parts of the interior of the shoe, in order that an outer sole may be stitched or sewed upon the inner sole and upper of a shoe.

I also claim arranging either the thread passage or looper, or both, within, or so as to operate with the auxiliary arm, substantially as described.

BREECH-LOADING FIREARM—Enoch Brooks and George Walker, of Philadelphia, Pa.: We do not claim the faucet-like construction and manner of applying the movable breech.

But we claim, first, The attachment of the hammer to an arm, I, having a curved back, to which the main spring, k, is applied, to operate in the manner substantially as described.

Second, The arrangement of the cocking lever, J, the sere, O, and trigger, r, as applied in combination with the main spring, R, and hammer arm, I, substantially as set forth.

Third, Combining the cocking lever, J, with the breech, by means of a slider, S, rod, v, and wrist pin, u, applied as described, to cock the lock by the movement given to the breech to permit the loading.

[This invention consists in a novel construction of the lock, for the purpose of enabling the hammer to be cocked by the movement of a breech of faucet-like construction. It also consists in certain means of cocking the hammer by the aforesaid movement. And it further consists in a certain arrangement in the lock of a feeding dog for feeding a ribbon priming to the vent.]

RAILROAD CAR SEATS AND BERTHS—Zenas Cobb, of Chicago, Ill.: First, I claim arranging the lower portions, A', and hinged backs, A2, of the seats, A, on the rail and ledges, C E, so as to either enable them to be used as a double sleeping couch, or as a seat, in the manner described.

Second, I also claim the arrangement of the cushioned frames or platforms, F, above the seats, A, and jointing them to the uprights of the partitions, D, and sides of the car, and providing them with lugs, H, and the sides of the car and the movable bar with swinging hooks or lugs, I, for forming the upper double berth when desired, as described.

[A notice of this improvement will be given next week.]

STOPPER FOR BOTTLES—Munson C. Cronk, of Auburn, N. Y.: I claim attaching to the necks of bottles and within a tapering space, B, a tapering or flaring tube, A, having a concentric cylindrical tube, E, cast or securing around the same with a cap, G, screwed on its top, and an outlet tube, F, atttached to its sides in the manner and for the purpose described.

[The nature of this invention consists in enlarging the mouth of the neck of the bottle, and attaching thereto a metallic tube of the form of a frustrum of a cone, having a cylindrical tube cast concentrically around its upper portion, on which is screwed a cap, in such a manner as to enable a part or the whole of the effervescent liquid in the bottle to escape from a tube in the side of the cylindrical tube, by partially unscrewing the cap, or the liquid to be closely confined in the bottle, by screwing the cap upon the tube, and pressing the packing on its under surface, upon the upper edge of the inner tapering tube.]

METHOD OF ATTACHING LAMPS TO LANTERNS—John Fleming of Pittsburgh, Pa.: I claim the combination of the spring, D, with the clips, E E, and the ring, F, for the purpose of effecting the attachment and detachment at the lamp of a lantern, all substantially in the manner described and shown.

BORING MACHINE—L. A. Dole, of Salem, Ohio: I claim, first, The combination of two drill stocks, F F, by means of an internally geared driving wheel, G, and a small pinion, H, so that a slow or fast speed drill or auger may be used at pleasure, as the necessity of the case may require, in the same machine, and by the turning of one and the same crank, substantially as and for the purposes set forth.

Second, Effecting the combination of both of said drill stocks. F F, with the feeding rack bar, I, and the two segment levers, K, by means of a flange, g, on the rear end of the rack bar, and collars, h h, on the drill stocks, F F', so that both shall be fed up together, substantially as and for the purposes set forth.

[A full description of this invention will be given next week.]

MACHINE FOR UPSETTING CARRIAGE AXLES—Zina Doolittle, of Perry, Ga.: I claim first, the arrangement of the center bar or anvil, A L, pivoted jaws, B B, and eccentric levers, D D, in the relation to one another shown, for the purposes set forth.

Second, The combination with the above of eccentric clutches, F F, dies, G G, springs, H H, and slides, I I, substantially as and for the purposes set forth.

[A notice of this improvement will be given next week.]

CORN PLANTERS—Warren Drummond, of Woodbridge, N. J.: I claim the particular manner described of arranging and combining for united use only the two dropping slides, D D, double-acting cut-off plate, E e e f f', double crank axle, H g g, covering rollers, H H, combined brace and scraper, I, adjustable furrow-opening and closing tubes or shares, K L, and secondary hopper, C C, for the purpose set forth.

[This machine is designed for planting two rows of corn at a time. It employs two hoppers, two adjustable tubes, with covering shares attached, and two covering rollers, which are furnished with scrapers, so that all dirt shall be scraped from their periphery. The dropping of the corn is regulated by a double-acting cut-off. The arrangement, as a whole, is very compact and simple, and doubtless is well adapted for planting corn.]

STEAM ENGINES—John Ericsson, of New York City: I claim the arrangement of the two cylinders in such manner that their base or bottom ranges with a plane which passes through the axis of the propeller shaft, or nearly so, in combination with a system of rock shafts, crank levers, and connecting rods, so proportioned, applied and arranged that the use of a driving crank on the propeller shaft, of greater length than half the stroke of the piston, is permitted, and that the connecting rods will operate nearly at right angles to each other, and will be in line with each other at the termination of each stroke of either piston, substantially as set forth.

[A notice of this invention will be given next week.]

PUMP—Gilbert B. Farnam, of Meriden, Conn.: I claim the use of the thimble, E2, cap, D', guide rod, m', having a re-acting spring, N, attached to its upper end, and confined within the air-tight thimble, in combination with the valve, L', and elastic diaphragm, O, for the purpose of lifting and dropping said valve squarely from and to its seat, and at the same time protecting the guide rod and re-acting spring attached thereto, from the rust of the liquids acted upon by the pump.

MILLS FOR CUTTING, CRUSHING, AND EXPRESSING THE JUICE FROM SUGAR CANE—John J. Fearrington, of Pittsborough, N. C.: I claim, in combination with the cutter, C, and the pressing rollers, F G, the guiding trunk, H, and dividing board, I, the whole being arranged for cutting, conducting to the pressers, pressing and separating the spent cane from the juices, as described and represented.

REGISTERING ATTACHMENT FOR CLOCKS—Stanislas Fournier, of New Orleans, La.: First, I claim, in combination with the clock, the wheel, C, by which I give motion to the wheel, D, that moves the rack, F, for a portion of the twenty-four hours; this I claim when either using the wheel, D, and the rack, F, as set forth, or any other analogous mode by which the apparatus can be made to register substantially the same, as regards the time specified.

Second, I claim the carriage, K, in combination with the rack, F, when the action of the clock, through the use of the rack, or its equivalent, gives motion to the carriage, and holds the index bar, M, over the card, ready to have the time indicated, as already set forth, and for the purpose specified.

PUMPS—A. A. Genung, of Painesville, Ohio: I claim forming the plunger rod in two separate and distinct parts, and constructing said parts with the barbs, D' and D'', and raised surface, E', also the form and location of the guides, I' J' and K', as specified, or their equivalents, by which said arrangement of parts, in combination with the motion of the wind wheel, I am enabled to apply the connecting and disconnecting principle to the plunger, for the purposes set forth.

FAUCETS—Henry Getty, of Brooklyn, N. Y.: I do not claim supplying air to the cask or barrel through the cock.

Neither do I claim a self-closing or valve faucet.

And I do not claim a drip hole to allow water, leaking through at the valve stem or piston rod, to run away at the discharging orifice.

But I claim, first, The cylinders, g and h, and slots, 3 and 4, in combination with the arm, i, on the valve stem, e, and the inclines, 6 6, substantially as and for the purposes specified.

Second, I claim the suction pipe, k, between the point of leakage or overflow at the spindle rod or valve stem and the delivery pipe, when said pipe, K, is in such a position to the discharging liquid that the rush of said liquid past its end shall augment the speed of the liquid in said pipe, and draw away any leakage as specified.

Third, I claim the air tube, l, of thin sheet metal, or equivalent material, inserted into the shell of the faucet, substantially as and for the purposes specified.

And in combination with said tube, l, I claim the self-acting air valve, o, on the cock, substantially as and for the purposes specified.

MACHINE FOR TURNING THE HEADS AND FOR NICKING SCREWS—Ira Griggs, (assignor to the Utica Screw Manufacturing Co.,) of Utica, N. Y.: I claim, first, The arrangement of a series of rotating blank holders in bearings, at equal distances apart, in and at equal distances from the center of a stock, which has an intermittent rotary motion, for the purpose of presenting each of the series in succession to the feed apparatus, to the cutter for turning the heads to the saw, for cutting the notches, and to a cutter for finishing the heads after the notches have been cut, substantially as described.

Second, The relative arrangement of the driving shaft, the blank holders, and their rotating stock, the turning cutters, and the saw for cutting the notches, substantially as described, whereby, when the blank holders severally arrive opposite the saw, the driving belt which gives them the rotary motion on their axis to effect the turning, is inoperative upon them.

Third, The series of movable rests, s t v, applied and operating substantially as described, to support the screw blanks, and hold them steady during the operation of the cutters and saw.

Fourth, Combining the holding dies, b b, with their operating levers, e e, by making the said dies detached from their levers, and fitting them to slide within guides in the holder, and applying adjusting screws to the levers at their bearing upon the dies, substantially as specified.

Fifth, Applying the discharging punches of the blank holders with springs, to retract them within the holders after the discharge of the blanks, and in such manner that the plungers, after opening the holding dies or jaws, will drive them forward to expel the blanks, substantially as set forth.

[See a description in next number.]

PLOWS—I. P. Harris, of Byhalia, Miss.: I claim the hollow foot, B, formed and arranged for the reception of the stock, A, and point, C, substantially as specified.

WASHING MACHINE—R. H. Harrison, of Laurel, Md.: I claim the construction of a washing machine having a concave bottom, a a a a a, with a secondary grating-like or fluted bottom, b c c, b c c, b c c, the slotted rocking lever, o o o, r r, and the corrugated balls, i i i i, or their equivalents, the whole constructed, arranged and operated substantially in the manner as set forth and described.

MACHINES FOR TESTING THE STRENGTH OF SPRINGS—S. H. Hartman, of Pittsburgh, Pa.: I claim, first, The application of steam through mechanical appliances substantially such as represented, to the compressing springs with a view of testing their temper or strength, substantially as described.

I also claim, in combination with steam, applied as stated, for compressing the spring to ascertain its temper or strength, the application of a steam indicator for showing in pounds weight or otherwise the amount of pressure applied, as set forth.

CHAIRS FOR RAILWAYS—Wm. Hall, of Springfield, Mass.: I claim the mode described for securing the ends of rails, constructed, arranged and combined in the manner and for the purposes set forth.

LATHES FOR TURNING IN METALS—George Henderson and Jacob Steele, of Allegheny, Pa,: We claim the combination of the two chucks, H H, with a lathe, the whole being constructed and operated in the manner specified. This invention is designed to operate in metal.

RUNNING GEAR OF WAGONS—Jonathan Hibbs, of Tullytown, Pa.: I claim the method described of operating both the axles of a wagon in turning curves, namely, by means of the curved rack affixed to each axle, in combination with the connecting pinion, in the manner and for the purposes substantially as set forth.

ROTARY PUMP—A. P. Holly, of Seneca Falls, N. Y.: I claim a rotary pump provided with eccentric cylinders B C, having concentric portions, f f f f, and corresponding depressions, g g g g, and operating within the compartments, a a, of the case, substantially in the manner specified.

METHOD OF CONSTRUCTING IRON RAILINGS—Luther Homes, of New Orleans, La.: I claim securing and embracing the circular projections, B B', at the upper and lower ends of the upright bars, A, within the horizontal tubular rails, D, formed by the semi-circular and straight bars, D D', and the portions of said bars next the flat circular parts between the notches in the bridge plates, H, and the left hand ends of the notches or depressions, E, in the edges of the bar, D, and the right hand ends of the corresponding notches or depressions, E', in the edges of the bars, D', by means of the interlocking pins, C C', and pins or lugs, F F', and hubs or blocks, I, substantially in the manner and for the purpose described.

[This improvement consists in forming the horizontal rails of iron railings hollow of two semi-circular bars connected together and to the upper and lower parts of the upright bars or newels, in such a manner as to form a strong and durable railing or balustrade in sections, capable of being readily secured together or detached and confined in a small space for transportation.]

CULTIVATORS—Duncan E. Hubbard, of Okolona, Miss.: I claim the combination of share, T F S F, stock, A B C D, and tooth, h 2, the whole being constructed and arranged substantially as and for the purposes set forth.

MEASURING FAUCET—Gilbert Hubbard, of Montville, Mass.: I claim the combination of the passages, A e, with the rotating cylinders, B B', provided with followers, N, connected by the lever, P, and operated through the medium gearing, i h G, pall, g, nitchet F, and spring, H, the above parts being used in connection with the cut-off, M, arranged with the nut, J, and levers, K L, or other equivalent device, whereby the cut-off may be closed automatically and simultaneously with the cessation of the rotation of the cylinders, B B', substantially as and for the purpose set forth.

[A notice of this improvement will be given in another number]

ROTATING SHAFTS WITHOUT USING A CRANK—Simon Ingersoll, of Greenwich, Conn.: I claim the lever, N, with its slide, P, or its equivalent, when arranged in the manner described and for the purpose set forth.

SKIRT HOOPS—Austin Kelley, of New York City: I claim combining and arranging two hoop skirts together in the manner set forth, the inner skirt being adjustable, for the purpose of forming a bustle when contracted, and for an additional support to the outer skirt when expanded, as fully described.

STEAM BOILERS—A. R. Ketcham, of Buffalo, N. Y.: I claim the construction and arrangement of the interior fire chamber, C, relatively to the furnaces, A A, &c., and the registers, B B, &c., for the purposes substantially as set forth.

CHURNS—James Macnish, of Berlin, Wis.: I claim effecting the breakage of the globules or sacks which contain the fatty particles of the milk or cream by the combined forces of compression and friction, employing for producing these forces a roller in combination with a stationary concave, the roller revolving within and and coming in contact with said concave, substantially as and for the purposes set forth.

[By this invention the cream or milk is subjected to a thorough friction and expressing action, and the globules or sacks which contain the fatty particles of butter are effectually broken. This invention is designed to supersede the old agitating process of making butter. We regard the improvement as a good one, and think it will make butter very perfectly and speedily, as it is a well-known fact that it is only necessary to accomplish the breuking of the globules or sacks in order to produce butter.]

CHURNS—James Macnish, of Berlin, Wis.: I claim, first, The combination of the inner set of tangentially set spring wings, I I, with the outer set of wings, G' G' G' G', substantially as and for the purposes set forth.

Second, The combination of the friction plates, H J, with the two sets of spring wings, and the churn tub, substantsally as and for the purposes set forth.

[This invention, as well as the one just described, is designed for producing butter by friction. In this case the friction principle is claimed in its application to upright churns, which have two dashers revolving in opposite directions. This arrangement appears to be a perfect one for this description of churn, and with it every globule or sack containing the fatty particles of the cream, it wnuld seem must be effectually broken, and butter consequently produced in double quick time.]

DUST PAN—Thomas E. McNeill, of Philadelphia, Pa.: I claim, constructing the dust pan with a dust receptacle or box, a, and an inclined surface, b, substantially as and for the purpose set forth.

[This dust pan is formed of an inclined and slightly concave surface, and a dirt receptacle or box, so that the dust is prevented from being thrown back upon the carpet or floor by the return movement of the broom while the dirt is being swept into the pan.]

RAKING AND BINDING ATTACHMENT TO HARVESTERS—John P. Manny, of Rockford, Ill.: I claim, in combination with a reaping machine, a rake that automatically throws itself out of gear when it arrives at the outer or grain end of the platform, in the manner substantially as described.

I also claim combining with a rake that automatically throws itself out of gear. and a gathering apparatus, a mechanism by which the driver from his seat, or the attendant at his stand on the machine, can throw said rake into action when desired, for the purpose and in the manner substantially as described.

I also claim in combination with a rake, and the gathering apparatus to form the gavel, the bent arm, P, provided with the points, v, for the purpose of holding one end of the band that is to fasten the gravel when gathered, substantially in the manner and for the purpose described.

I also claim the bent lever, n', with its forked head, which when operated as above described, shall carry the band between its prongs, and which when released, shall be driven back by the spring n, releasing the band, the hook of which shall then be driven into the band by the expansion of the gavel, substantially in the manner and for the purpose described.

I also claim operating the lever, u', by means of the coiled spring, u, for the purpose of adjusting the motion of said lever, so as to bind large and small bundles equally tight, substantially in the manner and for the purpose described.

HARVESTERS—John P. Manny, of Rockford, Ill.: I claim, in combination with a main frame, A, supported in a fixed position that is parallel with the surface of the ground at all times, and a finger bar attached thereto, and operated as described, one arm of the said frame extended sufficiently to the rear to project over or behind the finger bar of the machine, substantially in the manner and for the purpose described: and this I claim, whether the caster wheel be in front of or behind the driving wheel, as described.

TRACK CLEARERS FOR HARVESTERS—John P. Manny, of Rockford, Ill.: I claim, a wing board or track clearer which is hinged to the divider and composed of two or more parts which are hinged together, and which may be adjusted together or independently of each other, substantially in the manner and for the purpose set forth.

HARVESTER FINGERS—John P. Manny, of Rockford, Ill.: I claim, tapering the face of the guard finger under the sickle bar, and to the rear thereof to a point, and forming a cavity under and behind said point, substantially in the manner and for the purpose described.

MODE OF SECURING GRAIN IN BUNDLES OR SHEAVES—John P, Manny, of Rockford, Ill.: I claim, the use of a short band cut in suitable lengths for separate bundles, placed in proper position by hand, and automatically passed around the bundle and fastened by the expension of the bundle when released, substantially in the manner set forth,

BURGLARS ALARM CLOCK—John Matheuman, of New Haven, Conn.: I do not claim making an alarm which lights a lamp at the same time that it rings an alarm, as I am aware that that has been before effected. But I claim—

First, The application to the lamp, I, of the revolving emery paper cylinder, M, operated as described and for the purposes set forth.

Second, The combination of the frame, F, having duplicated brackets, with the tube, G, match holder, J, and lamp, I, as and for the purposes described.

Third, Connecting the lighting apparatus with an alarm clock, so as to operate either by the opening of the door or window of the room, or by the clock as set forth.

Fourth, The combination of the detaching lever, C, with the lever, B, and tongue, E, and their connecting wires so that the lighting apparatus, and if desired, the alarms can be operated from a distant point as described.

HILLSIDE PLOWS—Modest Merk, of Rochester, N. Y.: I claim, the reversible convex winged colter share, C, constructed as described in combination with the plane subsidiary mold board, D, connecting arm J, and furrow bar, E, arranged and operating substantially as and for the purpose set forth.

HARVESTERS—Jeremiah Mitchell, of Gosport, N. Y.: I claim, combining with the cutter bar of a harvesting machine in the manner described, the tilting jack, constructed as described, that is to say, having the revolving handle, G, spring chuck, H, stationary catch plate, F, pinion, E, and rack bar, D, in combination with the wheel C, these several parts being constructed and relatively arranged with respect to each other, and to the cutter bar, and operating in the manner and for the purpose set forth.

MACHINE FOR PARING, SLICING AND CORING APPLES—J. J. Parker, of Marietta, Ohio: I claim the combination of the stationary screw, slicing and paring knives, by which the apples are fed and revolved, arranged substantially as and for the purpose described.

I further claim feeding the apples past the paring knife, to the sliding device, by giving the apples a rotating motion, and using a stationary screw, the screw slicing device and paring knife being arranged relatively with each other, substantially as specified.

[In this device there is employed a rotating coring bit provided with radial flanches, a stationary screw and rotating slicing knives, all constructed and arranged so that the operations of coring, slicing and paring are performed in a perfect manner.]

SAUSAGE FILLER—John G. Perry, of South Kingston, R. I.: I claim, the combination of the tube or nozzle with the curved cylinder, for the purposes set forth substantially as described.

MACHINE FOR STUFFING HORSE COLLARS—Levi Plonk, of Newton, N. C.: I claim, the straw conveyers, d, in combination with the loose sliding frame H I, for the purpose of carrying the straw to the feed rod, substantially in the manner set forth.

I also claim the elastic blades, q r, in combination with the guards, t u, for the purpose of guiding the straw to the funnel, substantially in the manner described.

RAILROAD CAR COUPLINGS—J. H. Quackenbush, of Owasso, Mich.: I am aware that various forms of self-couplings have been devised, and I do not claim separately any of the parts, irrespective of their construction, arrangement and relative position as described, whereby the device is not only rendered self-coupling but is also rendered susceptible of being detached from within the cars, and the cars also if thrown from the track made to disconnect themselves. I claim therefore as new, and desire to to secure by letters patent, the lever, B, formed of two bars, c a, fitted in the head or socket, A, provided with a pendent, f, connected with the pin or bolt, C, and having the chains, D E, attached to it, the whole being combined and arranged as and for the purpose set for the purpose set forth.

[The pin or bolt which secures the link in the head is attached to a lever constructed in a peculiar way, so that the pin may be raised and the link released from within the car to which the coupling is directly attached, and the pin also released, and the link released in case the car or its adjoining one be thrown or runs off the track.]

VENTILATING MILL STONES—L. Racine, of Joliet, Ill.: I am aware that a blast of air has been forced through or between mill stones, in order to keep them in a cool state, and to absorb the moisture which the grain may contain, and I therefore do not claim broadly forcing a blast of air between the stones. But I claim the arrangement and combination of the blast pipe, N, curb, D, flanch, K, rim, L, flexible bottom, M, tube, G, and exhaust pipe, O, as and for the purposes set forth.

[This invention consists in having the eye of the runner or upper stone so enclosed that while the grain

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is readily admitted into the eye, a perfectly air tight blast passage is formed through the eye of the stone, between the stones and through the curb, the blast by this arrangement being rendered much more efficient than by the majority of ventilating devices.]

MACHINE FOR LEATHERING TACKS—Jesse Reed, of Marshfield, Mass. : I claim—

First, Driving the tacks and cutting out the piece of leather by a solid punch, operating in the manner substantantially as set forth.

Second, I claim the nippers, N, in combination with the rest, x, and tube, q, operating as described for the purpose specified.

ATTACHING CARRIAGE SPRINGS—Luther Otway Rice. of Berlin, Canada West : I do not claim either section of the springs described when separately considered. I claim placing the scroll spring, A, divergent to the axle and supporting the same on the axle by means of the clip, c, at the end thereof, and the raised double clip, D, or equivalent near the wheel for the purposes, and substantially as described.

MACHINE FOR LEATHERING TACKS—Charles L. Russell, of Derby, Conn. : I claim, one or more separators, 5 6 A, leaving a cavity in their ends, or an equivalent therefor, which shall grasp the head or body of the tack, or both substantially as and for the purposes herein described.

Second, The fingers, W W, arranged in the relation shown to the tube or guide, P, and working alternately, so that one serves as a stop to the tack and the other as a discharger thereof, in such a manner as to ensure the dropping of the tack into the tube or guide, P, with unerring certainty at the precise time and place necessary, substantially as and for the purposes set forth.

Third, The fork, 5, or its equivalent, when working through or across a tube near its top as shown, for the purpose of ensuring the dropping of the tacks perpendicularly into the tube, P, substantially as described.

Fourth, The guide or conducting tube, P P', having inclined or horizontal passages running into each other in combination with the driving punch, O, cutting punch, L N, die, M M, race, x, and feed motion, I J, substantially as and for the purposes set forth.

Fifth, The self-adjusting grooved rest or guide, v, for receiving and supporting the point of the tack, when arranged so that the tack shall be kept on the guide by its own weight, substantially as and for the purpose herein specified.

Sixth, Feeding leather or other material to the machine in the operation of leathering tacks, by each succeeding tack itself, which is driven into or through the material used for forming the heads or discs, and acts as a stop to a feed motion whereby to effect the movement of the material to a position in front of the cutting punch, substantially as described.

SASH HOLDER—Eliphalet S. Scripture, of New Haven, Conn. : I do not claim in the combination of my improvement as described, either a spirel grooved shaft or a two part tube or shell, the same having been described by me in my window fastener or lock, patent of March the 9th, the present year.

Neither do I claim the tracer, G.

But I claim the oscillating swivel cup, D, in combination with an elastic buffer, all being arranged and operated substantially in the manner and for the purposes set forth.

COTTON CULTIVATORS—Asberry Smith, of Ashville, Ala. : I claim the arrangement of the upright, A, brace, C, beam, D, and support, F, so that a plane will pass through or near the whole of them, and when the wing, B, is connected to and projects from the said upright, A, all as set forth.

ARRANGEMENT FOR DEVICES FOR PLANING MOLDINGS—Hezekiah B. Smith, of Lowell, Mass. : I claim, the relative arrangement and combination of the spire feed wheel, M, with the cutter head, F, and table, L, they being adjustable with each other in the manner described and for the purposes set forth.

BREECH LOADING FIREARM—George H. Soule, of Jersey City, N. J. : I claim the peculiar construction and mode of operating the plunger, E, and securing it to its place while the gun is being discharged. Also the brace, C, and the connection of the breech piece, B, and the lever, D. Also the cams, (i) (i), as applied to raising the brace, and any similar device by which the same results as are set forth, are substantially obtained.

TAILORS' MEASURE—W. R. Stace, of Rochester, N. Y. ; I claim the construction and use, substantially as described, of an instrument for measuring and drafting garments, said instrument consisting of the graduated arcs or dial plates (A' and B'), connected by the graduated arc (C'), said arc being expansible by means of slots, pins and screws, as described.

TREATMENT OF FIBRE OF TAMPICO HEMP—Werner Staufen, of London, England : I claim, changing the properties of the fibres of the plant known as the "Argave Americana," by first saturating said fibres with an alkaline solution, and then immediately submitting the same to the action of a high degree of artificial heat, substantially as herein described, and preparatory to using said fibres as a substitute for horse hair and bristles in the production of various useful articles.

CONTINUOUS CHAIR RAILS—Conelius A. Stancliff and James Mingis, of Williamsport, Pa. : We claim the combination and arrangement of the part, A A', with the protected cushion, D, and with the continuous chair, B, which latter is adapted to form two lines of continuous rigid supports, one under each side of the body or tread of the rail whenever the elastic material is compressed to a certain extent, substantially as above described and for the purposes set forth.

NAIL MACHINE—Hiram W. Taylor, of Birmingham, Pa. : I claim, first, the use of a rocking journal box for the sleeve of the feeding rod, to permit of the elevation of the lower end of the feeding rod when the nail plate is turned, or when a full nail plate is to be inserted.

Second, The combination of the pivoted lever, z, with the lugs, c', on the cog wheel and the inclined projection on the segmental cog wheel, for the purpose of securing their gearing together in the correct relative situation, as described.

Third, The use of a crab for connecting shafts, having one lug nearer the center than the other, so that the inner lug of one half of the crab will pass the outer lug on the other half without locking, for the purpose of causing them to gear always at the same relative point in their revolution.

Fourth, The use of a button or stop at the head of the feed rod in combination with a lever through the extremity of which the feed rod slides freely until the button or stop touches or presses forward the lever, for the purpose of disconnecting the feed apparatus from the nail machine automatically so soon as the nail plate is worked up.

Fifth, I claim the use of the gripping jaws, constructed as described, in combination with the rest, K', and the spring, S3, for the purpose of producing the requisite feed motion of the feed rod.

RICE HULLING MACHINES—John F. Taylor, of Charleston, S. C. : I claim the employment of use of the curved lever frame attached at one end to the bed piece, A, and having the pestle, D, permanently secured to the opposite end, the above parts being placed relatively with the vessel, B, as shown and described, and used in connection with the geared eccentrics, F G H, arranged relatively with each other and the lever frame c', substantially as and for the purpose set forth.

[The object of this invention is to obviate the difficulty attending the use of the crank which has hitherto been most usually employed for giving a reciprocating motion to a pestle which works within a vessel of proper form. The pestle requires to be driven with a rapid motion, and as the resistance to its motion is of course variable, more force being required at its downward than at its upward stroke, the crank pin as well as the journals of the crank shaft become worn and rendered useless. The invention consists in giving a reciprocating motion to the pestle by attaching the same to a level, which is operated through the medium of three geared eccentrics, whereby the pestle may be driven with but little wear of the working parts, and by a moderate expenditure of power.]

CORN SHELLERS—P. P. Taft, of Taftsville, Vt. : I am aware that a toothed rotating cylinder and concave is an old and well-known device, and has been used for shelling corn and for various crushing and grinding purposes : I therefore do not claim broadly such device.

But I claim the rotating toothed cylinder, C, in combination with two or more reciprocating toothed concaves, L L, moving simultaneously in opposite directions, the parts being arranged within a suitable box, case or framing, and operated substantially as and for the purpose set forth.

[This invention consists in the employment of a rotating toothed or corrugated cylinder in connection with the reciprocating toothed plates, arranged to opposite direetions, whereby corn may be more effectually shelled from the ear than by any of the machines hitherto constructed for the purpose.]

TRUNK PROTECTOR—R. M. Wade, of Wadesville, Va.: I claim the skeleton trunk casing made up of wooden strips with bent extremeties, connected with straps and attached to the trunk, substantially as and for the purposes set forth.

MACHINES FOR HULLING RICE—R. P. Walker, of New York City : I do not claim wheels or cylinders covered with emery in themselves, neither do I claim india rubber or elastic rollers in themselves, but I am not aware that a surface of emery has ever before been used in connection with an elastic roller or surface, to one or both of which a motion is communicated so that the emery abrades and removes the hulls of the rice or grain while partially imbedded and held by the elastic surface as specified.

What I claim is, first, A surface of emery, in combination with an india rubber or other elastic surface for hulling rice or other grain, when motion is communicated to one or both of said surfaces in such a manner that the said surface of emery abrades the hulls for removing the same, as the rice or other grain is partially imbedded or retained by the said elastic surface, for the purposes and substantially as specified.

Second, I claim imparting an end-wise motion to an elastic roller, or its equivalent. in combination with a revolving roughened surface, when the same is used for the purpose of hulling rice or other grains, substantially as specified.

EAR, CHEEK AND CHIN MUFF—W. P. Ware, of Cincinnati, Ohio : I claim the arrangement of the ear, cheek and chin pieces constructed as represented in Fig. 1 of the drawings, and joined together in the manner represented and for purposes specified in the specification.

STEAM ALARM AND SAFETY APPARATUS—S. W. Warren, of Brooklyn, N. Y. : I do not claim the expanding tube nor any of the parts that have heretofore been used in boiler alarms.

But I claim the arrangement and combination, substantially as shown and described of the arched or curved spring C, valve, E, and tube, B, for the purposes set forth.

[A description of this invention will appear in our next.]

FURNACES—B. H. Washington, of Hannibal, Mo. : I do not claim the cones or funnels, E E, for they have been previously used, and were formerly patented by me.

But I claim the air conductors, F F, placed below the grate bars, B, constructed as shown, and used in connection with the cones or funnels, E E, substantially as and for the purpose set forth.

[This is an improvement on a patent granted to the inventor Nov. 7, 1854. In that invention double hollow cones were used for the purpose of supplying the fire with a requisite quantity of air. This invention consists in using in connection with the two cones what may be termed air conductors, placed within the furnace below the grate, and so arranged as to diffuse the air equally over the surface of the grate, causing a more perfect combustion of the fuel with a milder flame than usual.]

MACHINERY FOR PRESSING STRAW BONNETS AND OTHER ARTICLES OF VARYING THICKNESS—H. E. West, of Norton, Mass. : I claim a mold either hot or cold to form the article pressed, in combination with a flexible presser operated by a fluid substance, either liquid or gaseous, substantially as described, so as to press the article or substance to be shaped or molded into the mold and give it the form or shape required.

I claim the use of cold water or other cold liquid to operate the flexible presser in combination with a hot mold, so that the cold flexible presser in combination with a hot mold, so that the cold flexible presser will condense the moisture evaporated or driven from the article pressed by the hot mold, and leave said article nearly or quite dry.

I also claim the process of shaping bonnets, hats and other articles by pressing them into, or on to a mold. either hot or cold, by means of a flexible presser, operated by some liquid or gaseous substance, substantially as described.

MAKING PAPER BAGS—Francis Wolle, of Bethelehem, Pa. : I claim, first, The combination of the creaser, C, and lapper, F G, arranged and operating substantially in the manner and for the purpose described and set forth.

Second, The revolving lapper shaft, u, in combination with the creaser, v s, the feed roller, M, and aprons, u, substantially as described, the creaser being brought iuto operation on the bags during the intermission in the motion of the feed rollers.

BEDSTEAD FASTENINGS—E. S. Wright, of Buffalo, N. Y. : I disclaim either device separately considered.

But I claim the combination of the coupling hook, C, wedge, D, and pin, E, arranged in the manner and for the purpose set forth.

FURNACES FOR STEAM BOILERS—Henry Yates, of Brantford, Canada : I claim the perforated metal cone, H, in combination with the tight furnace bottom operating in the manner substantially as set forth.

Second, And in combination with the above, I claim the damper, V, operating in the manner substantially as set forth.

Third, I also claim the water heater, I I', in combination with the perforated metallic cone and damper, constructed and arranged in the manner specified.

RAILWAY BRIDGE SIGNALIZER—Amos Burnham (assignor to himself and J. M. Cook), of Taunton Mass. : What I claim, is my improved signal apparatus consisting of a series of pendants and an arrangement of such as described, each pendant being of such weight as not to be capable of being so affected by ordinary aerial currents produced by a railway train or otherwise, as to be readily blown out of the way of a person on the top of a car or train or the load thereof while such may be passing under it, but still of a weight not capable of doing or causing material injury to sueh person under such circumstances, and each pendant being arranged at such distance from that or those next to it as to ensure contact with some one or more of them by a person when on the roof or load of a car, and being carried under them, and situated at such an elevation as to be in danger of injury from a bridge or obstacle toward which the train or car may be advancing.

STOPPER FOR BOTTLES—James Ewing (assignor to F. V. Rushton), of New York City, What I claim as an improvement in bottle stoppers for bottles containing gaseous liquids confined under high pressure, is the arrangement of the tubular stem valve, B, within the chest, A, with the cork tube, E, the whole being constructed and operated substantially as set forth.

WATER METER—Wm. Darker, Jr. (assignor to J. B. Thompson), of Philadelphia, Pa. : I claim the combination and arrangement of the eccentric cams, G G', angular rods, H H', attached to tne valve, K, and curved springs, E E', and friction rollers, F F', on the sides of the piston, A, for giving the required reciprocating movement to the valve, substantially in the manner described.

[A notice of this improvement is given in the next column.]

HORSE HAY RAKES—John F. Faust, of Lebanon, O., (assignor to himself and R. M. Ross, of Philadelphia, Pa. : I claim the combined arrangement of the arms, A' A' rods, B B, arms, E E, K K, and guide rod, A A, as constructed and arranged with the rake, H, and carriage, as represented, for operating the rake in the manner and for the purposes mentioned in the specification.

VALVE REGULATORS—William S. Gale, (assigner to himself, Alfred A. Valentine and W. H. Butler), of New York city : I claim. in combination with the plain diaphragm, B, corresponding load piece, C, compound lever, D E F, and the support, A', the projections or ridges, c c, on the under surface of the load piece, and the printing of the shape of the same into the diaphragm for the purpose of preventing the slipping of C, laterally upon B, as set forth.

PUNCH FOR PERFORATING METAL—Washington J. Granger, (assigner to D. J. Lake and C. B. Brown), of Chicago, Ill. : I do not claim the employment of springs for the purpose of elevating the punch and retaining it in place.

But I claim the arrangement of a punch with a series of slides, j, accurately fitting both punch and tube, and retained in their places by springs, K, or their equivalents, substantially as set forth, for affording a lateral support to enable the punch to withstand strain while operating.

PRESSURE GAGE—William C. Grimes (assigner to David Matthew), of Philadelphia : I claim the manner of constructing and arranging the concentric glasses and connecting tubes, as and for the purpose set forth.

PRESSURE GAGE—William C. Grimes (assignor to D. Matthew), of Philadelphia, Pa. : I am well aware that pressure gages with parallel glass tubes and siphon tubes indicating pressure by column of mercury and compressed air have been used, but they have no such effect as mine, and I do not wish to be understood as claiming any such arrangement.

But I do the peculiar construction of mercurial pressure gage, having two concentric glass tubes, so proportioned to each other and the reading scale, as to produce the necessary space to register the units and tens, and make them more uniform and legible, substantially as set forth.

CORN HUSKERS—Leonard A. Grover, of Roxbury, Mass., assignor to himself and N. T. Spear, of Boston, Mass. : I do not claim a revolving toothed cone, B, and toothed plate, D, separately, for they or their equivalents have been previously used.

I claim the rotating toothed cone, B, plates or boards, D D, one being provided with teeth, b', in combination with the tilting bed or hopper, E, and the vibrating knife, G, aad stationary knife, J, the whole being arranged to operate as and for the purposes set forth.

[This invention consists in the employment of shear- or a cutting device, tilting bed or hopper, and a rotating toothed cone and guide plates, the whole forming a very simple and efficient corn husker.]

LOCK—John Philip Lipps, of Newark, N. J., assignor to George D. Baldwin, of New York city : I claim the independent bit, M, constructed as shown and held anteriorly or above the bolt, by the horizontal spring, z, (and independent of the spiral springs) thereby securing against the introduction of any instrument to pick the lock.

MAGNETIC STEAM GAGE—Joshua Lowe, of New York city, assignor to himself and Daniel Barnum, of Jersey City, N. J. : I am aware that air and mercury have heretofore been combined and used in tight isolated or separate chambers to make pressure gages, but not in combination with a self-adjusting magnet and traversing needle. I am aware also that magnets, dial plates and needles have been used in combination, but not in a tight, isolated chamber separated from the steam boiler, or other means of making pressure, or Ior the purpose of marking or indicating, either pressure within a boiler or a vacuum in a condenser. I therefore do not claim either of these except as herein specified and for the purposes named.

But I claim the construction of a polar magnet with one arm or pole larger than the other, so that the enlarged pole will float on the sur ace of the mercury, whether the lesser pole be immersed or not, whenever the said magnet is placed within a chamber filled or partially filled with mercury, and hung on pivots in the center, thus making a self-adjusting movable magnet, capable of being used as a floating magnet within in a small tight chamber, substantially as described and shown.

I claim also the combination of a floating magnet, a magnetic needle and a dail or index plate forming one side of an isolated tight chamber, and with mercury and air within said chamber or their equivalents, for the purpose of making a magnetic pressure gage, substantially as described and shown.

I claim also the combination of a floating magnet, a magnetic needle, and a dial or index plate, forming one side of an isolated tight chamber, and with mercury or other fluid within said chamber, for the purpose of making a magnetic vacuum gage, substantially as described and shown.

BURGLAR'S ALARM CLOCK—George D. Sargent, of Boston, Mass., assignor to himself and Thomas R. Abbott, of Malden, Mass. : I claim the combination of the lamp and its lighting apparatus with an alarm apparatus, its case, and the door thereof, so as to be operated thereby, or to operate in connection therewith, substantially as specified.

I also claim arranging the lamp and the match carrier on the door, C, of the case, A, in combination with applying the match grater to the stationary part or body of the case, substantially as specified.

I also claim the combination for operating the extinguisher, G, the same consisting in the match grater, l, the spring lifter, c, the depresser, the catch, H, and the detacher, K, the whole being applied and made to operate together substantially as specified.

FAUCET—N. P. Whittelsey, (assignor to James A. Frary,) of Meriden, Conn. : I claim the adjustable gate, B, constructed in the form of a segment of a sphere, and fitted to the tube, A, over a concave seat, a, provided with a packing, e, substantially as and for the purpose set forth.

[See description in another column.]

RE-ISSUES.

METHOD OF VENTILATING SHIPS, &c. — Rudolph Knecht, of New York City. Dated November 11, 1856 : I do not claim any single part of the apparatus as my invention.

But I claim the ventilating of vessels, houses, rooms, or any other description of enclosed and covered spaces, by expelling the foul air contained therein and by simultaneously introducing in its stead fresh air, cooled air, by a combination and arrangement of two sets of wings on one shaft, acting simultaneously, substantially as described.

MACHINES FOR MARKING TIME OF ATTENDANCE OF WORKMEN—Benjamin T. Harris, (assignor to John McKillap, assignor to Mary E. Harris,) of Brooklyn, N. Y. Dated August 11, 1857 : I claim the combination of a registering surface operated by clockwork, with markers, so applied as to mark on said surface, and indicate the presence or absence of the employee or workman at or from the period of time denoted by the position of the registering surface, as specified.

I also claim a perforated plate, in combination with a slide, or its equivalent, whereby the presence or absence of the employer or workman to whom each perforation is alloted, is indicated, upon inspection, by means of black and white, or dissimilar colors exhibited behind said openings, as specified.

SEWING MACHINES—W. O. Grover, of Boston, Mass., and W. E. Baker, of Roxbury, Mass., (assignors of the Grover & Baker Sewing Machine Co., of Boston, Mass.) Dated June 22, 1852 : We are aware of the fact that in the patent of William G. Bates, 1853, there is described a curved non-penetrating needle, but the needle is so located and operated that it performs neither of the operations which are the peculiar functions of the described curved needle, but on the contrary, acts as a simple straight needle, spreading its loop while retreating out of the upper needle thread loop, by virtue of the grasp thereof, and not carrying this upper loop away from the position or location in which it was originally seized.

We therefore do not claim simply a curved non-perforating eye-pointed instrument, in combination with a perforating eye-pointed instrument for forming a double-looped stitch.

But we claim, first, In combination with an upper needle, or eye-pointed perforating instrument, a non-perforating eye-pointed instrument, so shaped and moved, substantially as specified, that it shall spread a loop of the thread it governs, while advancing through a loop of the upper needle thread, substantially in the manner and for the purpose specified.

Second, We claim in combination with an eye-pointed upper needle, a non-perforating instrument, having the function, substantially in the manner specified, of carrying the loop of the upper needle thread out of the location or position in which it was originally seized or the purpose substantially as set forth.

Third, We claim in combination with an eye-pointed instrument, an eye-pointed non-perforating instrument, substantially such as described, and performing the two offices of spreading a loop of its own thread while advancing through a loop of the upper needle thread, and of changing the locality of the loop of upper thread that it has seized, both offices being performed substantially in the manner and for the purpose described.

Fourth, We claim an eye-pointed upper needle, and an eye-pointed needle, so arranged and operating as to make a stitch substantially such as is represented, in combination with a feed apparatus, one surface of which has motion in four different directions, substantially in the manner and for the purposes described.

EXTENSIONS.

TYPE-CASTING MACHINES—David Bruce, Jr., of Brooklyn, N. Y. Patented November 6, 1843 : I claim, first, the male plate, n, constructed with a nipple protruding beyond its back surface, and springs attached to the plate, arranged and operating in the manner and for the purpose set forth.

Second, I claim the method of opening and closing the mold and tilting the matrix, by the combination and arrangement of the compound vibrating arm, H, and lever, J, arm, M and N, and spring, v, said lever, J, having a simultaneous vibrating movement on an axis on the vibrating arm, H, in the manner and for the purpose set forth; and this combination and arrangement I claim, whether effected precisely in the manner here set forth, or in any other manner substantially the same, by which analogous results are produced.

Third, I claim the adjustable mold block, o, combined with the vibrating arm, H, for the purpose set forth.

Fourth, I claim the combination of the adjustable frame, h, with the lower adjustable mold block, o, in the manner and for the purpose set forth.

Fifth, I claim the combination of the circular collar, perforated with a rectangular opening in the center, to admit the rectangular shaft or stem of the upper mold block with the hinge piece, i, and adjustable frame, h, in the manner and for the purpose set forth.

Sixth, I claim the manner of supplying the melted metal to the mold by a horizontally and vertically perforated piston placed below the level of the bottom of the metal pot, arranged and operated in the manner set forth, by which the metal is forced, with the mold at a lower temperature than heretofore effected, and the metal remaining in the mouth of the female plate, after the type has been cast, is drawn back into the seat or chamber of the piston as the piston rises, by which the mouth of the female plate is prevented from being stopped or choked by congealed metal.

Seventh, I claim the combined arrangement of these several parts, namely, the lever, a, cam, v, spring, d, rod, b, and vibrating beam, E, by which the piston is operated, as possessing the advantages set forth.

Eighth, I claim placing the vibrating mold arm, H, between the furnace and the propelling or cam shaft, as described.

MACHINERY FOR MAKING BARRELS AND OTHER CASKS—Isaac Crossett, of Bennington, Vt. Patented July 1, 1844; re-issued March 2, 1858; extended June 26, 1858 : I claim the vibratory block or bed, D, adjustable gage, C, and knife or cutter, B, arranged relatively with each other, so as to operate as and for the purpose set forth.

DESIGNS.

TYPES—James Conner, of New York City.

PRINTERS' TYPES—James Conner, of New York City.

PRINTERS' TYPES—James Conner, of New York City.

RANGE FRONTS—A. C. Barstow, of Providence, R. I.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims :—

IMPROVED WATER METER.—William Darker Jr., of Philadelphia, Pa., has invented an improved water meter, his invention consisting in arranging and combining with an oscillating piston enclosed in a box, a series of parts for operating a slide valve, connected with the registering apparatus, in such manner as to cause the valve to be moved at the end of each oscillation of the piston, and thus by the action of the water in its constant flow through the meter to register the quantity. The patent has been assigned to J. B. Thompson, of the same place.

FAUCET.—This is an improvement in that class of faucets which are designed for the "drawing" of molasses, oil and other substances that are thick and do not flow readily. The object of the invention is to obtain a free and uninterrupted passage for the substance to be "drawn" when the faucet is open, and also a deflector to guide the substance into the proper receptacle, the deflection forming when turned so as to close the faucet, a perfect "cut-off" preventing all drip. It was patented by N. P. Whittelesey and assigned to Frary & Co., of West Meriden, Ct.

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New Inventions.

New Patent Hydrant.

This hydrant is made entirely of metal, the case being of cast iron, and the pipe and chest of turned brass. Our engravings and the accompanying description fully explain its construction and operation.

Fig. 1 is a perspective view of the hydrant, Fig. 2 is a vertical section, and Fig. 3 is a horizontal section of the water chamber or box, which can be round instead of square when economy of space is desirable, the discharge pipe being also bisected, showing the perforations at its lower end and also the valve.

A represents the case of the hydrant, of cylindrical, or other desired form. This case is sunk a suitable distance into the earth, so that its lower part will be beyond the action of the frost. The bottom of the case is perforated with holes, as shown at *a*; and the pipe, B, from the "main" passes into the lower end of the case, at its side; said pipe being bent upward, within the lower part of its case, at its center.

The upper end of the pipe, B, has a screw thread formed on it; and a box or chest, C, is screwed on the upper end of pipe B. The cover, *b*, of the box or chest is secured to it by screw bolts, *c*; and the cover has a neck or tube, *d*, cast with it, the neck or tube projecting upward a suitable distance. A leather strip is fitted to the under side of the cover, *b*.

D represents a pipe, the lower end of which is fitted and works in the neck or tube, *d*, the pipe passing through the cover, *b*, and having a valve, *f*, secured to its lower end by a screw, *g*. This valve, *f*, is formed of a square plate, having its sides made concave, as shown in Fig. 3, and the plate is sufficiently large, so that it cannot turn within the box or chest, and become unscrewed or detached from the pipe, D. The concave sides or edges of the valve also afford a free passage for the water in ascending within the box or chest above the valve.

The lower end of the pipe, D, has holes, *g'*, made in it, and the valve, *f*, rests upon a spiral spring, *h*, within the box or chest. The pipe, D, does not work tightly within the neck or tube, *d*; sufficient space is allowed for the escape of water up between the inner surface of the neck or tube and the external surface of the pipe, D. Around the pipe, D, and at a suitable distance above the neck or tube, *d*, a flanch, *i*, is secured, and a strip of leather, *j*, is attached to the under surface of said flanch.

The upper end of the pipe, D, is curved or bent in semi-circular form, and passes through the side of the upper part of the case, A, and a short vertical bar, *k*, is attached to the upper part of the pipe, D, this bar, *k*, having a lever, *l*, passing through its upper end, as shown in Fig. 2.

The operation is as follows:—When the lever, *l*, is left free, the hydrant is closed by the spring, *h*, in connection with the pressure of the water, keeping the valve, *f*, snugly up against its seat or leather. When, however, the pipe, D, is forced downward, by actuating the lever, *l*, the water will rush through the passages formed by the concave sides of the valve, and pass through the holes, *g'*, up through the pipe, D. When the pipe, D, is depressed, and the water is rushing up through it, the leather, *j*, on the flanch, *i*, fits over the upper end of the neck or tube, *d*, and serves as a cut-off, preventing the water from escaping into the case from between the tube, *d*, and pipe, D, as shown, in red, in Fig. 1. When, however, the lever, *l*, is left free, the pipe, D, will ascend; the valve, *f*, fitting snugly against its seat, and preventing the water from escaping up within the pipe; and as the flanch, *i*, is then above the upper end of the neck, *d*, the water within the pipe, D, will descend, and pass upward between the neck, *d*, and pipe, D, and escape into the case, A. The box or chest, C, is placed sufficiently low within the case, A, to be beyond the action of the frost.

In case any repairs are required, the box or chest, C, may be readily detached by removing the head of the hydrant and turning the pipe, D, till the box or chest is unscrewed from said pipe, D. The box and pipe, D, may then be lifted out of the case, and repaired with the greatest facility.

The inventor is W. W. Binny, of Seneca Falls, N. Y., who may be addressed for further information, or N. P. Lindegreen, No. 5 Commercial Wharf, Boston, Mass., who owns half the patent; both have rights for sale. It was patented June 2, 1857.

BINNY'S HYDRANT.

Fig. 1

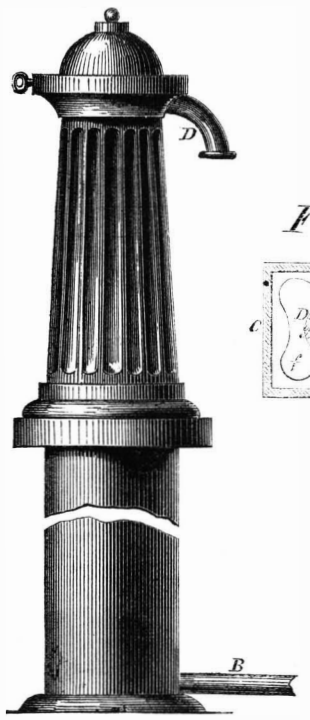


Fig. 3

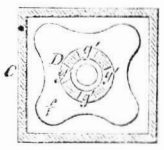
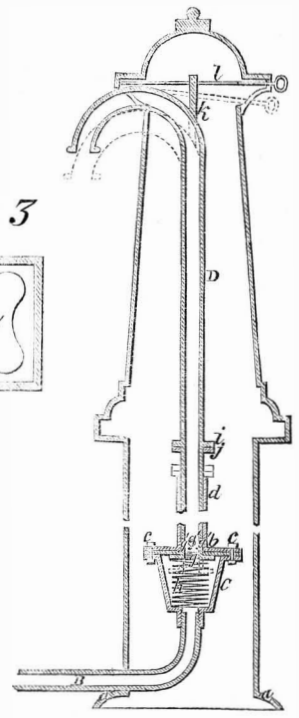


Fig. 2



KELLY & FROST'S SMUT MILL AND SEPARATOR.

Fig. 1

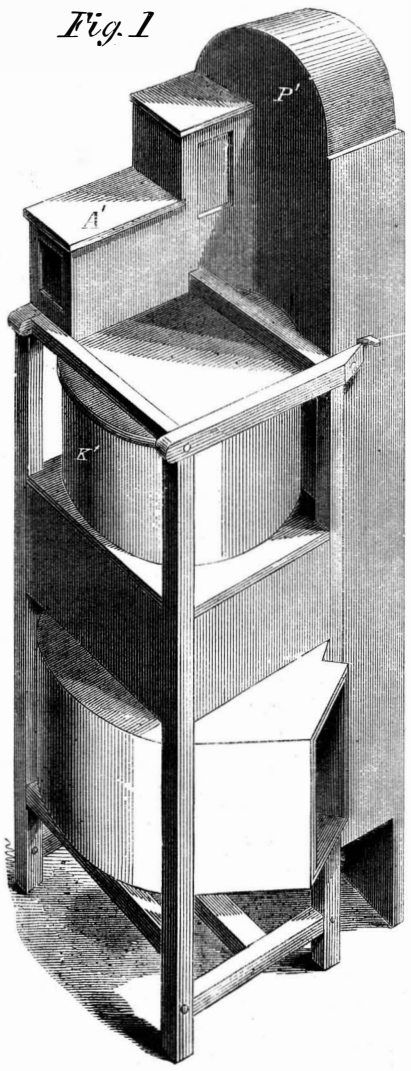
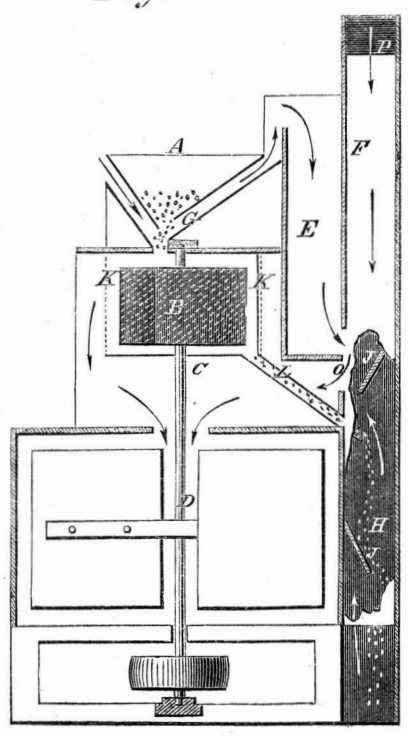


Fig. 2



The purpose of this excellent machine is to remove everything contained in wheat that is lighter than thirty pounds to the bushel, whether it be blasted wheat, foul grain or smut. To effect this the wheat in passing through the machine is subjected to three distinct separators, by the full suction powers of the machine. The first separation is obtained as the wheat enters the machine, by which the smut balls and loose dirt are removed before the grain is admitted to the scourer.

The second separation takes place within the scourer, where the wheat is acted upon by the blast and beater with the full force of the machine, and allowed to flow from the mill thoroughly scoured and freed from smut and dust of all descriptions, and in this condition reaches the separator, where it is acted upon for the third time, and entirely cleaned from any foul grain that may have escaped the former processes. The inventors believe that a full and complete separation before scouring has never been satisfactorily attained by combined smut machines, while a second separation, between the heaters, has never been attempted.

The machine is constructed in a substantial manner, and can hardly be surpassed for durability and simplicity of operation. It is run by a single belt, and occupies less than three feet and six inches square of room, and operates so as to keep the mill perfectly clear of the dust and dirt thrown off in the separating process.

In our illustration, Fig. 1 is a perspective view of the machine, and Fig. 2 is a section. A is a hopper through which the grain passes into the separator, B, being previously met by the blast at G, where the first separation takes place. Passing into the separator, it is acted upon by the beaters and thoroughly scoured, while the dust and smut are drawn through the perforated cylinder or concave, K K, through the chamber, C, and blast fan, D. The wheat passes from the smut mill, B, through the spout, L, with the passage, H, where it is acted upon by the blast that passes up over the partition at P, and down through the opening at O, chamber C, and fan, D. J J are valves intended to regulate the blast in the passage. In Fig. 1, A', K', and P' are the cases of A, K, P, Fig. 2.

It was patented May 4, 1858, by the inventors, J. C. Kelly and Amos Frost, of Edinburgh, Johnson county, Ind., who will be happy to give any further information that may be required.

The Maryland Institute.

They are practical people in Baltimore, and have not let their Institute "for the promotion of the mechanic arts" dwindle into a mutual admiration society, as some other cities have done. From the report, which we have just received, we find that in the past year, sixteen lectures have been delivered on interesting and useful subjects, a School of Design has been eminently successful, and a course of twenty lectures on chemistry have been delivered to attentive audiences; altogether, the Maryland Institute is really working for its country's good. The last Annual Exhibition was eminently successful, and the next (the eleventh) will commence on Tuesday, the 5th of October, 1858. Inventors wishing to have space allotted to them should apply early to the Actuary, John S. Selby, or to the Superintendent, Samuel Hindes, Esq.

The Patent Office Bureau.

The Washington correspondent of the Baltimore *Sun*, in speaking of the labors and responsibilities of the departments at Washington, says:—

"The Patent Office Bureau is one of sufficient importance to justify its organization as a department. The Commissioner of Patents is a judicial, as well as ministerial office, and we frequently have occasion to notice that in his decisions are involved questions of greater magnitude, in a pecuniary point of view, not only as between individuals, but as between them and the public at large, than any other that are ever before any other branch of the government. Thus, the late decision in favor of the application of Charles Goodyear for the extension of his patent for vulcanizing india rubber, involves some millions of dollars—that is, the extension applies to manufactured products amounting to eight millions of dollars a year, and upon which the manufacturer makes a profit of fifty per cent. If the patent were thrown open to the public, the profit of the manufacturer would be reduced and regulated by competition. The history of this case, as presented to the bureau, occupied the space of fourteen volumes octavo. I mention the above only as an instance of the labors, responsibilities and powers of the bureau officers."

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Scientific American.

NEW YORK, JULY 17, 1858.

The Geology of North America.

Professor A. C. Ramsay, F.R.S., F.G.S., recently visited this country, and while here made some notes upon the geology of the Canadas, and the north-eastern provinces generally. The chief object of his investigation was to discover the effects of glacial action; and he plainly showed, in a recent lecture before the Royal Institution in London, that the valleys on each side of the Laurentine chain of mountains, have all been cut by ice. The banks of the St. Lawrence near Brockville, and all the Thousand Islands, have been rounded and *moutonnee* by glacial abrasion during the period when all this mass of ice was moving southward into what is now the Atlantic Ocean. He observed the scratchings and striations which are so peculiar to rocks and stones that have been abraded by ice, all along the Catskills, and finding that they do not run down hill, as they would certainly do had these markings been produced by glaciers, but they run north and south, he concludes that they have been produced by icebergs grating along these mountains when the valley of the Hudson was a sea of 4,000 feet deep, and the Catskills formed the coast line. In fact, it seems from the Professor's paper that the whole of America south of the lakes. as far as latitude 40°, is covered with glacial drift, consisting of sand, gravel, and clay with boulders, many of which during the submergence of the country, have been transported several hundreds of miles from their parent Laurentine chain, and all the underlying rock shows the evidence of having been ice-smoothed and striated.

It has long been thought by many geologists that great changes had been effected in the physicial geography of the northern part of this continent, by the action of ice, but it has never been so clearly made out before. We have to thank the cold and uncongenial epoch known as the "glacial period," for the rounded smoothness of our scenery, the gentle slopes, and sweet descents, the Thousand Isles and other beauties of our continent. As a contrast, happy and harmonious, to the lover of the picturesque, stand out the rugged rocks and the rough abraded surfaces, which lend an extra charm to the scenery, and render the Catskills a place of such delight. Nature is ever lovely; but when we trace the causes of that loveliness, then wonder mingles with admiration, and intellect as well as sensation is brought into play in the appreciation of our Mother Earth.

Smallpox and the Poor.

It has occurred to us, in view of the fact of the inefficiency of the officers of the Department of Public Health, and the almost daily development of recklessness in their treatment of evils which are open to public inspection, that there must be a vast amount of injury inflicted upon the suffering poor and others, whose miseries are unknown to the world. Little is known indeed how much injustice is committed, and how much useless and wantonly-inflicted misery is endured by thousands in our midst from the ignorance and heartlessness of the members of the Board of Health, and others having charge of the sanitary condition of our city and public institutions. An infected ship is allowed to remain at the very entrance to our harbor for months without the least effort being made to destroy the pestilence which she contains, until finally, when all her stores and contents are thoroughly surcharged with the endemical agent, and the heat of summer so favorable to the spread of contagion has arrived, life is wantonly endangered by sending persons on board to rake out from a malarious atmosphere, the accumulations of many months of pent-up disease, and to deposit them where there is a strong liability of their producing further contamination.

The last act of neglect on the part of our health-wardens is noticed in a late number of the New York *Daily Times*. It appears from the statement of that journal that smallpox has prevailed to a great extent for six months past, and from January 1st to the last week in June, four hundred and twenty-five persons have died with it. Assuming what physicians say is true, that under unfavorable circumstances, the ratio of mortality from smallpox is not over one to ten, we have the startling fact that four thousand two hundred and fifty persons have suffered, been marked and otherwise injured by this most virulent disease in six months, most of which could have been prevented by an early quarantine of the disease, and a proper enforcement of the system of vaccination heretofore observed. Most of these cases are among the poorer class of the community, who, while they are more liable from their manner of life to take an infectious disease, are yet less careful to avoid its contaminating influence.

Why, then, has not a proper system of vaccination been enforced among these unfortunate people? The employment of a few physicians of acknowledged merit to visit every household in the city would have greatly abated the evil, and have been a praiseworthy expenditure of money. We are unfeelingly told by the health officers that the diseases of the poor are brought on by their own criminal neglect. We are all sensible how much the amelioration and care of such patients depends upon the skill and humanity of those whose duty it is to administer to them, and that much of the evil complained of may have arisen from the want of these qualities. If the abuses lately developed could exist in the public proceedings of the Board of Wardens, with all the means of correction which their public action commands, how must we shudder to think of what cruelty and injury may, and most probably does exist in the carrying out of the more private acts of these unworthy and ignorant conservators of the public health.

Our Board of Health Again.

The New York *Daily Times* informs us, concerning this *excellent* and *scientific* body, that the Directory sets down "one of the twenty-two as a clerk, two as watchmen, one as a carpenter, one as formerly a policeman, two as carmen, two as keepers of groceries, one as a reporter, one as an upholsterer, and one as a builder. If, in the performance of their official duties, a chemist should be needed, we presume the carman would be on hand to make the delicate tests and experiments. If a physician's practiced acumen were demanded, there is the carpenter or the grocer ready. Meanwhile the fact is established that the ratio of deaths to population in New York is about one in twenty-eight, while in London it is about one in forty!"

While these gentlemen have the reins of *Hygeia* in their hands, vessels are daily arriving with yellow fever on board, and our quarantine officers have not any remedy, but to let them lie close to the city while they endeavor to cure their patients in the old and ordinary manner. How long will such a state of things exist?

DR. BROWN SEQUARD, a *savant* of the first order, has concluded, before the London Royal College of Surgeons, a course of six lectures on the physiology and pathology of the central nervous system. In one of his recent lectures he stated that he found a spot in the brain—the point of the "pen" of the *calamus scriptorus*—not larger than the head of a pin, which, if touched, is sudden death, as instant as lightning.

SWILL MILK.—This question is agitated in Cincinnati, and is beginning to be discussed in the *Eclectic Medical Journal*, published in that city, in the columns of which we are sure that it will receive a candid and careful consideration, the results of which we shall anxiously look for.

Important to Patent Agents and Lawyers.

UNITED STATES PATENT OFFICE,
June 30, 1858.

SIR—The specification and one drawing of your * * * * are herewith returned, to enable you to furnish a specification which shall more definitely and fully state the construction and operation of your alleged improvements. The claim should be more definite, and should contain the words "substantially as herein above described," or words to that effect. Your oath is not in proper form. The accompanying rules are sent for your guidance. Respectfully yours, &c.,

J. HOLT, Commissioner.

REMARKS.—We purposely omit the name of the invention, as well as that of the applicant, from the above official letter. It pertains to an application for a patent which was prepared by a lawyer, who, though probably well versed in legal lore, possessed no knowledge or facilities for doing patent business. His client's specification was consequently botched up, and the application rejected until proper papers should be filed. We publish this letter as an example of cases that are constantly being placed in our (Munn & Co., Patent Attornies) hands, for the purpose of being straightened up, and conducted to a successful issue.

It is not to be expected, especially in these days, when new inventions are so rapidly multiplying, that agents who live at a distance from the Patent Office, and have no facilities for the management of patent business, can carry it on with satisfaction, either to themselves or their clients. Now, we have at our command the combined facilities of the two largest patent agencies in the country, one being located at New York, and the other at Washington. These facilities include the constant daily access to all the official records, assignments, extensions, books, models, and papers pertaining to nearly all American patents ever granted, and to thousands of rejected cases and foreign patents. In addition to this, we have the advantage of many years experience in the business, during which we have, and do now maintain, a palpable preëminence over all other establishments of the kind in the world.

We mention these facts for the benefit of our brother agents, wherever they may happen to be located, and would say that the combined advantages of our agencies *are always at their service.* We shall be happy to render them every assistance in our power in any matters relating to patent business, whether it be in the prosecution of rejected cases, the preparation of specifications, drawings, assignments, searches of the records, extensions, re-issues or appeals, &c.

In new applications it will generally be advisable to have their papers pass through our hands for revision before being sent to the Patent Office, for it is usually more difficult to straighten a case after it has been improperly submitted, than before the documents are filed. Some agents may find it convenient to have us prepare the patent papers from beginning to end. When this is desired, the model should be forwarded to us. Copies of any desired claims, or the patents, with drawings in full, we can promptly furnish.

Our brother agents are, no doubt, frequently applied to for their opinions relative to the novelty and patentability of new inventions. But such has been the wonderful augmentation of improvements within the past ten years, that few persons can give an opinion worth a straw, unless it is based upon or backed up by *a thorough special examination of the models and patents at Washington.* We therefore advise all agents to recommend their clients to have a *Preliminary Examination* made, at Washington, to ascertain whether their invention is actually new. This service will be promptly rendered by us, and, including a written report, will cost but a small fee. The client's name need not appear. A sketch and description of the improvement is all that we need. We shall be pleased to correspond with patent agents at all times, and to furnish any further information, by way of making arrangements, that they desire. (Address Munn & Co., New York).

In respect to taking out foreign patents we would also say that our facilities are of the most extensive and complete character. We employ the most experienced attornies abroad, so that those who commit business to our care will nowhere have it exposed to the risks of irresponsible and incompetent sub-agents.

Ingenuity Wrongly Applied.

There is scarcely a week passes that we have not presented for inspection some startling theory, founded upon an improper conception of a principle in science, which, according to the sanguine expectations of the inventor, is in its practical operation to produce a revolution in the particular branch of mechanics or social life to which it refers. At one time an enthusiastic inventor ignores the well-known law in mechanics that the raising of a given weight of any material requires the expenditure of a corresponding amount of power, and attempts to create a power by raising water by the aid of an Archimedean screw to supply a water wheel, or some equally fallacious process. At another, we have a plan for almost doubling the power of a high-pressure steam engine, by simply passing the exhaust steam through an auxiliary re-acting rotary engine; the author not reflecting that in the precise proportion as the steam in its escape from a steam cylinder is impeded, will there be a re-acting force exerted against the piston. Indeeed, many of the systems and alleged improvements brought to our notice, and applauded by editors of newspapers who should know better, are founded on more vain hypothesis than those we have mentioned. Oftentimes they are the result of the thoughts of men of otherwise really eminent abilities, who are guided by the purest intentions. It is to these latter that we wish to offer a few remarks.

When you conceive a design having for its object the production of an extraordinary result—such, for instance, as increasing the speed of machinery without a corresponding increase of power, subject it to a scientific scrutiny and judgment, lest when your ardor has persuaded you beyond the bounds of sober judgment, and caused you to subject to practical test what well-known principles had already declared impracticable, you will be regarded rather as an enthusiast than as a man of science. If a man, having the reputation of experience and knowledge in any branch of the arts, in the glow of his ambition and enthusiasm, endeavors to destroy all distinctions, and to erect a fine-spun but fallacious system on the ruin of a more perfect model, he inflicts a downright injury upon what is conceded as sound. Many persons, in examining their plans and reasoning, will find that by endeavoring to accomplish what is unattainable, they prejudice the mind against what is practicable. And though it may be said that such speculations have their use, as they afford hints of improvement, yet, in view of the character of their authors, they are attended with this dangerous inconvenience, that the mind in search after truth is discouraged in its progress when it finds those whom it has been led to regard as its most capable conductors deviating into the mazy tracks of luxuriant fancy, instead of leading it through the safer paths of sound philosophy and practical science.

Deferred Articles.

A large quantity of matter of immediate importance compels us to again defer, until next week, the publication of the interesting articles on Boilers and Furnaces, and Horse-shoeing.

On the 1st inst., one of Berdan's mechanical bakeries was opened at Chicago, Ill. The usual festivities, speeches, &c., accompanied the celebration.

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GOODYEAR'S PATENT EXTENSION.

COMMISSIONER HOLT'S DECISION.

[CONCLUDED.]

An earnest endeavor has been made to depreciate the ingenuity displayed in the invention by representing the discovery to have been the result rather of 'accident' than of scientific investigation. As early as 1834-'5, Mr. Goodyear seems to have formed a most exalted estimate of the capabilities, as a material for manufacture, of the gum known as 'caoutchouc,' or 'india rubber.' This gum had been previously extensively employed in the fabrication of a variety of articles, but, owing to their indifferent quality, all concerned in these enterprises, as well as in those which followed for a series of years afterward, were involved in bankruptcy and ruin. The fabrics thus made could not keep the market, because they were found to grow rigid under the influence of cold, and to soften and become sticky under that of heat, while they rapidly decomposed when brought into contact with perspiration and the animal oils. The applicant was thoroughly convinced that these qualities, which had proved so disastrous to the trade could be removed, and he set himself resolutely to work to ascertain the process of accomplishing this result. Sulphur had already been advantageously combined with india rubber by Hayward, so that the discovery had been approached to its very verge. The step, however, which remained to be taken, short as it was, was indispensable, and without it all those which had preceded it would have been unavailing. Science could afford but little assistance in the inquiry, for, as the event proved, the most potent element in the process was too subtle to be disclosed by the severest chemical analysis. The applicant had therefore to pursue the investigation gropingly; but he persisted in it with an ardor and a courage which nothing could abate or daunt. His aim was definite, his conviction as to its attainability complete. As one who searches for a hidden treasure in a field where he knows it is to be found, so pursued he his explorations in quest of this secret. He sought it on the right hand and on the left, by day and by night, in the midst of ceaseless toil and lavish expenditure, and by the light of every form of experiment which his most fertile genius and daring spirit could suggest. He became completely master of everything known in regard to the properties of the material which it was his ambition to improve, and so thoroughly was he imbued with the soul of his inquiry, and so intensely quickened was his vigilance, that no phenomenon, however minute, could meet his eye, no sound, however faint, could fall upon his ear, without his once detecting and appreciating its bearing upon the great problem whose solution he was seeking. From four to five years were passed in these unremitted labors, when an incident occurred which at once revealed the long-sought truth. And it is a singular coincidence that the spark of light yielded by this incident was elicited by a collision, so to speak, the result of that intense zeal which, so far as health and fortune were concerned, had been the consuming fire of his life. In one of those animated conversations so habitual to him, in reference to his experiments, a piece of india rubber combined with sulphur, which he held in his hand as the text of all his discourses, was by a violent gesture thrown into a burning stove near which he was standing. When taken out, after having been subjected to a high degree of heat, he saw—what, it may be safely affirmed, would have escaped the notice of all others—that a complete transformation had taken place, and that an entirely new product—since so felicitously termed 'elastic metal'—was the consequence. When subjected to further tests, the thrilling conviction burst upon him that success had at length crowned his efforts, and that the mystery he had so long wooed now stood unveiled before him. His history in this respect is altogether parallel with that of the greatest inventors and discoverers who have preceded him. The lamp had swung for centuries in the cathedral of Pisa, but, of the thronging multitudes who worshipped there, none had heeded the lessons which it taught. It was reserved for the profound and observant intellect of young Galileo to extract from its oscillations the true laws of the pendulum, which led to the creation of an infallible measure of time. The theory of universal gravitation loses nothing of its grandeur or value because suggested by the falling of an apple from the tree. In all lands, by teeming millions, this phenomenon had been observed, but to none had it imparted instruction—to none had it spoken of that wonderful secret which lurked beneath its simple features. At length its 'still small voice' fell upon the delicate and appreciative ear of one whom it startled into inquiry. The light thus afforded, to whom all had been blind, was indeed dim and twinkling; but, following its guidance as one who traces back the dawn, the great Newton soon plunged into the full-orbed splendors of a discovery confessedly the most brilliant which has gilded and ennobled the annals of science. On all the hearth-stones of the civilized world, for thousands of years, the kettle had boiled and lifted its lid by the expansive power of its steam; yet for none had this seemingly trite and ever-recurring incident been significant—to none had it announced that measureless power of which it was the humble but distinct exponent. At length the movement caught the eye of a lonely student of nature, then a prisoner in the Tower of London, and in the soil of his prolific mind it proved the rapidly-expanding germ of that steam engine whose triumphs have changed the social, political, and commercial aspects of the globe. So india rubber, in combination with sulphur, may by accident have been exposed to a high degree of heat often before without attracting the attention of any: and it is safe to allege that it might have been thus exposed a thousand times afterwards without the worlds having been the wiser or wealthier for it. The thorough self-culture and training of the applicant and his unwearied researches, prepared him at once to seize upon, to comprehend, and imbody, in a practical form, the truth he sought, the moment it presented itself, no matter how dimly, to him. This was his merit—the same in kind with that of the most illustrious inventors, who have appeared in the world, and by that of but few of them surpassed in degree. It is a figure of speech—but an exalted mode of expression—which assigns to man any part in the work of *creation*. In his very best estate he is but a ministering priest at her altar, and when he has reached the highest walk in the drama of intellectual power to which his feeble steps can ascend he is still but an humble translator of the languages of nature. It is a fact which singularly increases the credit due to this inventor, that the very path in which he finally achieved success was the one which the experience of the past had taught him to shun. A low degree of heat had been applied to a combination of india rubber and sulphur, and it had melted under it, so that heat—the increased intensity of which consummated the discovery—was the very element which he had felt himself admonished to avoid. The discovery being made, the applicant soon thereafter added white lead to the combination, which rendered it complete, and assuming that his mission was but begun, he bravely bent himself to the task of surmounting the obstacles which still frowned upon him on every side. These obstacles, so graphically sketched in the testimony, seem to have been almost unprecedented. Capitalists shrunk away from the discovery, so confidently announced, as a chimera, and manufacturers who had suffered so deeply by the india rubber business denied it their confidence. Its practicability had to be demonstrated by a long series of illustrations, which the total want of experience rendered protracted and often ruinously expensive. Every inch occupied in the enlarging field of its usefulness had to be conquered by many sacrifices, while, of the Protean formed applications to which it was destined to attain, there was not one that did not involve an outlay of treasure, of toil, and high artistic skill. All these, from the beginning to the present hour, have been bestowed—unceasingly bestowed—upon it, and as the fruits of all these have been, and are still being, reaped by the public, the applicant is entitled to remuneration for them.

Has the applicant been remunerated for the TIME which he has devoted to this invention and to its introduction into use?

It is extremely difficult to estimate in the coin of dollars and cents the worth of eighteen years of the prime of human life—especially so, when the life is one of lofty genius, of indomitable enterprise, and of stainless virtues. It is, however, about that period of precisely such a life, that has been consecrated to the pursuit and development of this discovery—nor would a shorter period of time have sufficed for the arduous and perplexing task. This declaration may be made with the more emphasis, because, in all the volumes of testimony filed, there is not one word found tending to its contradiction. Throughout those long and toilsome years it is apparent that there has been no compromise with the suggestions of avarice or with the claims to self-indulgence and ease. It has been already fully shown that the applicant's fortune, his health, the comforts of his family, the freshness of his early and the patient energies of his later manhood, have all been unhesitatingly melted down in the crucible of this inquiry, and he is now seen tottering toward that grave which must soon open in his path, with nothing left of the heroic and athletic man but what remains of the maimed and scarred soldier on the battle-field—a wreck which every great and generous people have taken fondly to their bosom. The time of the indolent, the selfish, the dissolute, and the dull, is little worth to a world which they rather cumber than bless by their presence; but the time of the gifted, the brave, the philanthropic and unconquerable sons of genius, has for mankind a value which we should but feebly express in the arithmetic of dollars. But while we may have no means by which to measure with unerring accuracy the intrinsic worth of the ingenuity and time which have been expended, and cannot by any analysis weigh or compute their ingredients, there remains to us one standard by which a proximate estimate at least may be reached—that is, the results which have been produced. What that time and ingenuity have yielded to the public is the true test of their value, alike to that public and to the inventor; for what the former have have received the latter must, upon every principle of sound logic, be held to have parted with.

What have been the results of the discovery and introduction into use of the vulcanizing process? The testimony is very full upon this point. We learn that through this instrumentality a large foreign commerce has been created in the raw material, and an inland trade in the india rubber fabrics amounting to between four and five millions of dollars annually; that extensive india rubber manufactories have grown up, giving profitable investment to some seven millions of dollars of capital, and active employment to some ten thousand operatives; and that a large portion of these fabrics is intimately connected with human comfort and the preservation of human life. Not to enumerate more of the articles produced by this process, it would be hazarding nothing to say that the shoes and wearing apparel perfected by it, and now cheaply and abundantly made, and almost universally in use, have saved thousands from a premature death, and may save millions in the ages which are to come. In the presence of these vast and still expanding achievements of this invention, the criticisms which have been made upon the applicant's accounts, as though they were some petty grocer's bill, shrink into insignificance, and, indeed, can scarcely be listened to without a blush. We have, however, a yet more definite basis on which to rest our judgment—the testimony of Hayward and Haskins. Both have long been india rubber manufacturers under the vulcanizing process, and the former made the valuable discovery of combining sulphur with the gum, for which a patent was granted to him. Their depositions are marked by frankness, and leave no doubt of their perfect acquaintance with this great interest, in all its ramifications and aspects. Hayward says that the vulcanizing process for the next seven years would be worth to the public one million of dollars; if so, it should have been worth two millions for the last fourteen years. Haskins does not hesitate to estimate the process at "many millions of dollars." It should be observed that the evidence of the contestants does not reduce these estimates. It is not possible to escape from the conclusion to which statements so emphatic, and coming from sources so fully entitled to credit, lead us. If, then, this process is worth two millions of dollars, the applicant has received but a little more than one-fortieth part of the remuneration which he was entitled to claim.

It has been assumed as a means of avoiding the force of these estimates, that the applicant is entitled to receive from the public, not what the invention is now worth, developed and established as it is, but what it was worth when the patent issued. This view has been urged with much persistence and plausibility, but it has not impressed me as liberal or sound. When the invention came, timid and struggling, into existence, meeting in every quarter with scoffs and distrust, had it been offered for sale in the market, it would, probably, have commanded a few thousand dollars—possibly less. But to say that its value is to be measured by what it was then considered to be worth, would be to determine that the character of the tree is to be judged rather by the green than by the ripe fruit found upon its branches. The present expanded and prosperous condition of the invention is mainly owing to the genius and unceasing struggles of the applicant, and he may justly reap what he has sown, and so diligently cultivated. In the adjustment of machinery to accomplish the ends so distinctly pointed out by the inventor, and in the manipulations of the gum and treatment of the fabrics in the various stages of their manufacture, it is admitted that many improvements have been made by skillful mechanics and operatives, and these have their utility and importance; but to allow such labors to rival or depreciate the claims of the applicant, would be to rank the simple plowman of the fields with that sublime and beneficent Providence which creates alike the soil out of which the harvest springs, and the sunshine and the shower by which it is nurtured and matured.

Another, and most potent reason, why this patent should be extended is found in the acknowledged fact that the public have not kept the faith which they plighted with the applicant when he covenanted to surrender to them a product, which was, in effect, the concentrated essence of the physical and intellectual energies of his entire life. That public stipulated with him that he should peacefully enjoy for fourteen years the monopoly created by his patent, and, had he been permitted to do so, he would, no doubt, long since have realized an ample remuneration; but, so far from this having been the case, no inventor probably has ever been so harassed, so trampled upon, so plundered by that sordid and licencious class of infringers known in the parlance of the world, with no exaggeration of phrase, as 'pirates.' The spoilations of their incessant guerilla warfare upon his defenceless rights have unquestionably amounted to millions. In the very front rank of this predatory band stands one who sustains, in this case, the double and most convenient character of contestant and witness; and it is but a subdued expression of my estimate of the deposition he has lodged, to say that this Parthian shaft—the last that he could hurl at an invention which he has so long and so remorselessly pursued—is a fitting finale to that career which the public justice of the country has so signally rebuked.

Important as are, to the parties of this issue, the immediate consequences bound up with it, they are insignificant indeed as compared with the value, to the public, of the principle involved. From the very foundation of this government, it has been its settled policy to secure a just reward to all inventors, and it is to the inflexible maintenance of this policy that we are indebted for the unparalleled advancement, which, as a people, we have made in the useful arts. All that is glorious in our past, or hopeful in our future, is indissolubly linked with that cause of human progress of which inventors are the *preux chevaliers*. It is no poetic translation of the abiding sentiment of the country to say, that they are the true jewels of the nation to which they belong, and that a solicitude for the protection of their rights and interests should find a place in every throb of the national heart. Sadly helpless as a class, and offering, in the glittering creations of their own genius, the strongest temptations to unscrupulous cupidity, they, of all men, have most need of the shelter of the public law, while, in view of their philanthropic labors, they are, of all men, most entitled to claim it. The schemes of the politician and of the statesman may subserve the purposes of the hour, and the teachings of the moralist may remain with the generation to which they are addressed, but all these must pass away, while the fruits of the inventor's genius will endure as imperishable memorials, and, surviving the wreck of creeds and systems, alike of politics, religion, and philosophy, will diffuse their blessings to all lands, and throughout all ages.

However much the seeming perplexity in the applicant's accounts may expose him to cavil, and to that vituperation which is so ready a coinage of the professional zeal, and however short some of the points in the case may fall of that complete elucidation which could have been desired, there is one fact established beyond all controversy, and which stands out from this record with painful prominence. At the close of all his toils and sacrifices, and of the humiliations he has been called on to endure, this public-spirited inventor, whose life has been worn away in advancing the best interests of mankind, is found to be still poor, oppressed with debt, and with the winter of age creeping upon his shattered constitution. It is perfectly manifest that this is in no degree the result of vice or of improvidence on his part, but is an inexorable consequence of the impoverishing experiments inseparable from the prosecution of his great enterprise, and of that prolonged and exhausting strife in which unscrupulous men have involved him. He now begs of that country to which the energies of his manhood have been so freely and so faithfully given, that he may be allowed to enjoy, for a few years longer, that precarious protection which our most feeble and imperfect laws extend to the fruits of intellectual labor; and were the appeal denied, I feel that I should be false to the generous spirit of the patent laws, and forgetful of the exalted ends which it must ever be the crowning glory of those laws to accomplish.

The patent will, therefore, be extended for seven years from the 15th of June, 1858.

J. HOLT, Commissioner.

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Correspondents

H. B., Jr., of Canada.—We can give you no information as to where the "Tinsmith's Guide" can be obtained.

R. C., of Ky.—We are not disposed to furnish receipts for making rum or any other kinds of spirituous liquors

C. C., Jr., of Mass.—No; the water which discharges through pipe No. 6 of your contrivance will *not* drive a wheel with sufficient power to pump fluid enough to keep the machine perpetually in motion. The reason is the same as that which prevents you from lifting yourself over a picket fence by simply drawing upon the seat of your pants.

S. J. L., of Conn.—You inquire if "a patent prohibits any one from making the invention for his own use." We have frequently answered an inquiry of this character in our columns, but we have no objection to a repetition if we can thereby enlighten any of our readers. A patent confers upon the patentee the *exclusive* right to make, use, and sell his invention. He can also allow the same rights to others; but it would be a punishable infringement of his patent for any one, without his authority, to make and use for their own private purpose, or sell to others to use, the patented invention.

Z. E. C., of Conn.—It will be safe to have your lightning rod terminate in the well, notwithstanding the fact that there are iron pump pipes extending to the house. Upward discharges of electricity have been known; but the fluid has never been known to discharge downward, and then run right back again to the clouds. If it were to do so in the case suggested it would follow the rod, because that would be a better conductor than the house. The greater the quantity of conducting material at the base of the rod, communicating with the earth, the better. The electric fluid is thereby spread over a larger surface, and passes off more readily. The water and pump pipes will therefore assist the discharge of the electrical fluid. It will make no difference whether the rod and pipes are in contact. We should prefer to have them in contact, because the metal is a better conductor than the water. Water will conduct electricity from one point to another, or from one conductor to another. These facts have before been given in our paper, though not in this precise form.

G. P., of Mass.—A good distance indicator for carriages would take well, we think.

C. S., of Pa.—For the tubing and the information you ask, apply at any of the rubber stores in your city.

H. M., of Conn.—Get Masser's ice-cream freezer, at New Haven, Conn.

G. W. H., of N. Y.—Your communication upon the sundial is very interesting, but we have no room for its insertion at present.

K. E., of N. Y.—The oil of mustard is obtained by expressing the seed. Any sirup may be made, which will keep without alcohol, by simply expressing the juice from the fruit and boiling with sugar, and excluding the air from the vessel in which it is contained.

W. A. H., Jr., of R. I.—A solution of alum applied to the cloth will render it impervious to water for a long time, and will not mildew.

A. H. L., of Wis.—Sulphuric, not muriatic acid, is employed to bite worn files. Use one part (by measure) of the acid to seven parts of water, and place the files vertically in the liquor thus made. They should be thoroughly cleansed in soap suds from oil and grease, before being put into the acid. Steep them in the acid for half an hour, then wash them well in hot water, and they are fit for use.

J. B. M., of Ill.—On page 380, Vol. 6, Sci. Am., you will find an engraving of a self-regulating flood gate. The patent was issued November, 1849, to S. D. Hopkins, of Brookville, Va.

"Old Subscriber" seems to be ignorant of the nature of kerosene and camphene, so far as it regards their non-explosive character. The frequent accidents which take place by the explosion of lamps are not caused by camphene, as you seem to suppose, but a composition of camphene and alcohol.

E., of N. Y.—Your surmises that some one has been to the Patent Office and exerted an influence unfavorable to your case, are wholly unfounded. The Commissioner would not tolerate, for a moment, any such interference. Depend upon it, in our hands, your case is safe, and every possible thing will be done to secure your rights. No action has yet been reported, and we presume its time for examination has not arrived.

A. C., of N. J.—It is said that the Chinese possess the secret of rendering copper hard enough to make edge tools, but we western barbarians do not know how it is done.

A correspondent wishes to know what kind of cement is used for fastening block letters for signs on stone or brick. Can some subscriber inform him?

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, July 10, 1858:—

J. M. E., of N. Y., $55; A. S., of N. Y., $30; E. T. L., of Ala., $14; A. F. R., of Ill., $30; E. B., of N. Y., $15; W. A. H., of N. Y., $30; J. D., of N. Y., $30; H. T. C., of N. C., $30; A. S., of Pa., $25; A. N. McE., of Mo., $30; G. W. B., of N. Y., $55; A. S. S., of Ohio, $30; F. B., of Conn., $30; C. & S., of L. I., $25; D. & K., of N. Y., $30; P. W. G., of Ill., $50; J. M., of Ga., $250; F. C., of N. Y., $25; U. T. S., of Tenn., $25; F. B. A., of Iowa, $55; A. G. D., of Conn., $30; H. L. A., of Wis., $30; L. W., of Mich., $25; L. & D., of N. Y., $30; J. J. S., of Mass., $35; T. H., of Ohio, $30; J. L. F., of Texas, $65; A. W., of L. I., $25; R. W., of Vt., $30; B. B. S., of Ill., $25; P. S. C., of Ill., $30; J. & J. J. C., of N. Y., $25; F. McN., of Ohio, $30; F. K., of N. Y., $30; J. N. L., of N. Y., $25: J. B., of Conn., $155: J. S., of Ohio, $30; K. F., of Wis., $30; C. S. P., of Conn., $30; J. A. T., of Ohio, $25; P. D., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 10, 1858:—

J. N. L., of N. Y.; J. & J. C. H., of N. Y.; C. & S., of L. I.; J. J. S., of Mass.; L. W., of Mich.: J. M E., of N. Y.; E. M. S., of N. Y.; U. T. S., of Tenn.; J. J. P., of Ohio; A. W., of L. I.; J. M., of N. Y.; J. D. S., of Ohio; E. T. L., of Ala.; B. B. S., of Ill.; F. C., of N. Y.; A. S., of Pa.; S. B. S., of Mo.

Literary Notices.

Hunt's Merchants' Magazine for July contains, in addition to the usual amount of valuable matter, a likeness and biography of Lieut. General Sir William Pepperrell, Bart.—the only native American ennobled by the British government for services rendered America. It is published at 142 Fulton street, N. Y.

Good Bread, Without Yeast or Powder. Published by W. Hunt. 18 and 20 La Grange place, Boston. Price 10 and 15 cents.—This little work contains some healthy, practical, careful receipts, and some common sense advice on ventilation, diet, &c.

The Eclectic Magazine of Foreign Literature. W. H. Bidwell, 5 Beekman street, New York.—This number for July contains some excellent articles. The one entitled "The Beautiful in Nature, Art and Life," from Titan, strikes us as the best.

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Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and date of patent when known, and enclosing $1 as fee for copying.

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Yours, very truly, CHAS. MASON.

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Science and Art.

Treatment of Copper Ores.

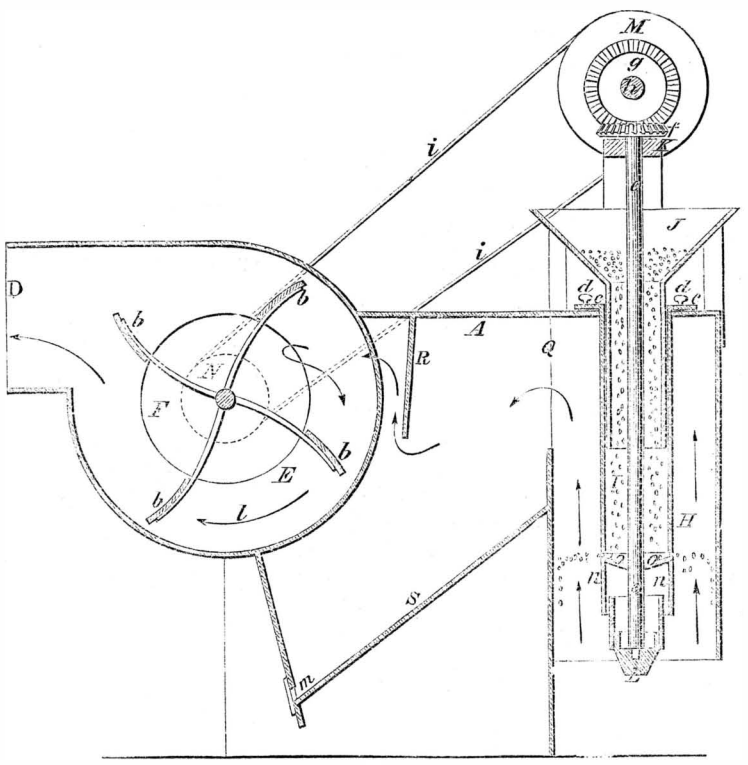
A patent has recently been obtained by Mr. Henderson, of Bristol, for a method of obtaining copper and other metals associated with it in quartzose copper ores in the wet way. This method appears likely to be of considerable value for working ores containing a large admixture of gangue. In the case of ores containing only oxyds, carbonates, arseniates, phosphates, and similar compound, no preliminary treatment is requisite; but ores containing chiefly sulphides must be first roasted, for the purpose of driving off the sulphur, and converting the metal into the state of oxyds. The crushed ore is introduced into vats, with perforated false bottoms, raised some inches from the true bottoms, and covered with a layer of brushwood or straw, to prevent the ore falling through. When the vats are filled, hydrochloric acid is poured on the top of the ore, so as gradually to filter downwards through it, dissolving out the metallic oxyds meanwhile. The liquid that accumulates at the bottom of the vats is pumped up, and made to pass several times through the ore, so as to saturate the acid as much as possible; or a series of vats may be used, through which the liquid is passed successively. When the metallic oxyd, &c., is dissolved out of the ore, the residue is washed with water, removed, and a fresh charge of ore put into the vats. The strength of the acid to be used varies according to the nature of the ore operated upon. A loose, porous, and poor ore requires a weaker acid than a more compact, richer ore. The liquid thus obtained contains the metals—copper, iron, lead, &c.—in the state of chlorides. If it contains any iron in the state of protochloride, enough chlorine is added to convert it into perchloride of iron; and, after this has been effected, finely powdered carbonate of lime is added in slight excess, for the purpose of precipitating oxyd of iron. Lead and some other metals are also separated from the liquid by this means. The clear liquid from which the precipitate has been separated will then contain copper, which is precipitated as oxyd by means of quicklime. This is effected best at a boiling temperature. The precipitation may also be effected at the boiling point by carbonates of lime, baryta, magnesia, &c., sulphides of barium, calcium, &c., or the lime waste from soda works. In this way an oxyd, carbonate, together with, in all cases, a solution of chloride of calcium, is produced. The precipitate is washed, dried, and smelted in the ordinary way.—*Mining Chronicle.*

Improved Grain Cleaner.

The ordinary grain cleaner is imperfect in one essential point, viz., the feeding of the grain. The invention we are about to describe is designed to remedy this defect, and consists in delivering the seeds or grain to the blasts by the centrifugal action of a revolving disk plate placed in the wind trunk, so that the seeds or grains shall be thrown out horizontally in a thin sheet across the blast, and the unbroken ascending current take the lighter grains immediately from the heavier ones, and thus separate them.

In our illustration, which is a vertical longitudinal section through the invention, A is the outside case. The fan, *b*, is rotated by a crank and gear wheel, and moves in the direction of the arrow, *l*, so as to draw a current of air through the machine, and force it out at D. The fan blower runs in a case, E, which is closed except at the eyes, F, the air passing from the machine through side ducts, and through F into the fan box. H is a vertical wind flue, open at its lower end, but closed at the top. Through the center of this wind flue there passes a feeding tube, I, which rests by its flanges, *c*, on the top of H, and by means of set screws, *d*, this tube can be raised or lowered in H, to regulate the feeding in of the grain, and in its upper end is placed a hopper, J, in which the seed or grain is placed. Two bridge trees, K L, form bearings for a shaft, *e*, that passes through I, and this shaft has on its upper end a bevel wheel, *f*, which is rotated by the bevel, *g*, on the shaft, *h*, moved by the band, *i*, and band wheel, M, from the wheel, N, on the crank axle. Near the bottom of *e* there is placed upon it the disk cup, O, which may be termed a "distributor." This being rapidly rotated throws the grain off by its centrifugal force, the quantity being regulated by the set screws, *d*. The grain thus thrown off pass in a thin sheet across the current of air ascending through the wind trunk, the lighter particles or grains, as well as the impurities, being carried up with the blast, whilst the heavier grains fall through the trunk. By this throwing off horizontally across the blast the seeds or grains, the heavy grains do not strike and carry down with them the lighter ones, as is generally the case when they are

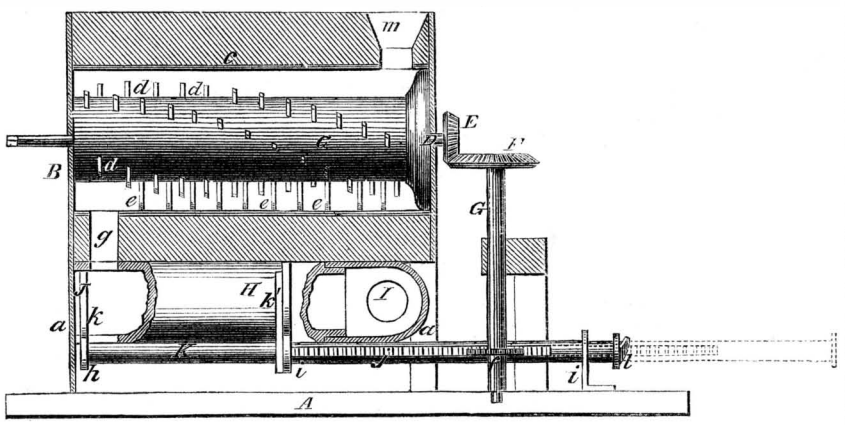
VANDEGRIFT'S GRAIN CLEANER.



fed in, in the ordinary way, but the separation of the light from the heavier products takes place when the grain or seeds are thrown across the blast, there being a momentary cessation of motion as the momentum of the grain thus thrown from the distributor gives way to the superior force of the ascending column of air, and whilst at this almost apparent state of rest, the heavier products fall, by their gravitation, and the lighter ones pass up with the blast, the strength of which may be regulated by slides. The hopper or feeding tube, I, should be kept full of grain, so that no air can pass through the tube. The light grains pass through the opening, Q, into the box, and fall down upon S, from which they can be withdrawn by a gate *m*. A board, R, prevents any from passing into the fan box. The smut, chaff, dirt, &c., pass through the fan box, and are discharged at D. The cylinder, *n*, below the distributor, O, is intended to prevent a counter current or eddy below the distributor—it being important that the ascending current should not be broken by any disturbing force.

It was patented June 8, 1858, by the inventor, A. J. Vandegrift, of Lexington, Ky., who will give any further information.

SNIFF'S SAUSAGE MACHINE.



This machine makes sausages direct from the meat at one operation, without any handling or chance of uncleanly treatment. Our engraving is a transverse vertical section of one of these machines, which the following description will explain:—

A is a bed piece on which a rectangular box, B, is supported by uprights, *a*. The box, B, is formed of two parts connected by hinges, and each part contains a semi-cylindrical concave, *c*, the two concaves when the box is closed forming a cylinder in which a drum, C, is placed, the shaft of which, D, has its bearings in the ends of the box, B. The drum, C, has teeth, *d*, projecting from its periphery, and placed in spiral rows and in the lower half of B there is placed a series of stationary metal plates, *e*. These plates are all parallel with each other, and equal distances apart so that the teeth, *a*, can work between them, as the drum rotates. To one end of the axle, D, is attached a bevel wheel, E, that gears into another wheel, F, on a shaft, G, the lower end being stepped into A. There is a pinion, *f*, on G. To the underside of B there is attached a cylindrical chamber, H, one end of which communicates with the interior of the box, B, by a passage, *g*. The opposite ends of this trunk has a nozzle, I, attached to it at right angles, and a plunger, J, is fitted within the trunk, A, the plunger working freely within it. The plunger is connected with a rod, K, by means of an eye, *h*; the rod being outside and below H, and fitted in bearings, *i*, in which it can slide. A rack, *j*, is on one side of the rod, K, and the pinion, *f*, gears into the rack when J is in the trunk, H. H has a slit, *k*, in its end near *g*, to allow the plunger to pass through, and a slit, *k'*, is made in the trunk, H, near its junction with the nozzle, I. From the end, K, an arm, *l*, projects.

The operation is as follows:—The meat is placed in the box, B, through the hole, *m*, and motion is given D by any suitable means. The meat is cut by the teeth, *d*, as they pass between the plates, *e*, and it is fed along to *g* by the spiral arrangement of the cutters, *d*, and consequently the meat is subject to the action of each tooth, and when it reaches the passage, *g*, it will be cut quite fine. The cut meat then passes into H, and the operator, by grasping the handle or projection, *l*, and turning the rod, K, passes the plunger, J, into the trunk at *k*, and the pinion, *f*, gearing into the rack, *j*, pulls J along, and thus forces the cut meat through I into the case; when the plunger arrives at *k'*, it is turned out by the operator, and again, by pushing K back, and turning it, the plunger assumes the position shown in our engraving.

W. Sniff, of Fultonham, Ohio, is the inventor, and from him any further particulars can be obtained. It was patented December 1, 1857.

How to Dye Green with Picric Acid.

Dissolve the picric acid in water, add sufficient sulphuric acid to give the mixture a slightly acidulous taste, and then add carmine of indigo according to the shade of green desired. To die silk a little alum should be added, which is not necessary for wool.

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